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JAPAN'S TUNA MARKET

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region

NOAA Technical Memorandum NMFS

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NOAA-TM-NMFS-SWR-026

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EXECUTIVE SUMMARY

Total world catches of major tuna species (skipjack, bigeye, yellowfin, albacore and bluefin) have increased by 45 percent during the last seven years, from 1.8 million metric tons (tons) in 1983 to 2.6 million tons in 1989. Much of this increase is the result of expanded tuna fisheries in countries other than Japan and the United States.

The tuna fishery is the most important fishery in Japan in terms of value. In 1989, Japan's tuna landings were valued at nearly 2.8 billion dollars, approximately 20 percent of Japan's total value of fishery landings for that year. In retail value, this was worth about a trillion yen (8 billion dollars).

Japan's tuna fishery faces a number of difficult challenges. Chief among these are: (1) competition from Korea and Taiwan as suppliers of high-value tuna, (2) growing international regulations and catch quotas for tuna in international waters, (3) lack of experienced labor for distant-water tuna vessel operations, (4) high cost of production, (5) increasing influence of imports on pricing of tuna in domestic markets, and (6) a sharp decline in landings by its own fleet.

The decline in Japan's tuna landings has occurred across the board for all major species in recent years. A decline of 8 percent occurred for skipjack in 1989 and 1990. A 4-year consecutive decline totalling 33 percent occurred for bigeye since 1985, a 6-year decline of 31 percent for albacore since 1984, and a 9-year decline of 78 percent for bluefin since 1981. Declining catches by its own fleet makes the Japanese market increasingly more dependent on imports, especially since the demand for more high-quality tuna has been rising steadily.

Our special interest in the Japanese tuna market stems from the simple fact that the demand is huge, requiring an annual import close to a billion dollars. Imports have been growing at an enormous rate, at an average 17 percent for a recent 7-year period through 1990. Furthermore, during the 1980's, consumer preference has shifted to foods which offer virtues such as convenience and a gourmet image, as well as food with wholesome health implications.

Unique to Japan, the nation has a huge raw consumption market for tuna amounting to about 400,000 tons. As much as 35 percent of this market is supplied by imports at the present time, but the proportion is expected to rise for some time.

Tuna species used for raw consumption as sashimi and sushi in Japan are: northern bluefin (Thunnus thynnus), southern bluefin (Thunnus maccoyii), bigeye (Thunnus obesus), yellowfin (Thunnus albacares), and skipjack (Katsuwonus pelamis). Bluefin is the most-prized and hence the highest -priced tuna species in the Japanese market, followed by bigeye, yellowfin and skipjack. For instance, average prices at six major wholesale markets for fresh fish in 1990

were 4,937 yen/kg ($16.62/lb) for bluefin, 2,227 yen/kg ($7.50/lb) for bigeye, 1,156 yen/kg ($3.89/lb) for yellowfin, and 714 yen/kg ($2.40/lb) for skipjack.

As Japan and the United States are signatories to the General Agreement on Tariffs and Trade (GATT), lower tariffs apply to U.S. exports of tuna products, 5 percent on fresh or frozen products, 15 percent on prepared or preserved products including products in airtight containers, and 15 percent on salted, smoked or dried products, based on CIF (cost, insurance, freight) prices.

While the United States has secured a niche in this market, it is mainly through the export of fresh bluefin tuna, which remains relatively small in value in proportion to the total potential market that could be exploited. Based on the analysis in this study, several marketing strategies are possible.

Farming of Bluefin Tuna. By focusing on improving the meat quality rather than the fish size, small bluefin tuna can be fattened for approximately 6 months to become a product which is marketable as high-priced tuna in Japan. Southern California seems to offer favorable environmental conditions to warrant a pilot feasibility study.

Value-added Products. Evidence suggests that value-added products such as "negi-toro", which cater to the shifting preference of the Japanese consumers, are keys to successful future promotion of tuna and tuna products in Japan.

Direct Sale of Fresh Tuna to the Tokyo Central Wholesale Market. Fresh tuna can be sold directly at the Tokyo Central Wholesale Market on consignment through one of the authorized auction houses.

Sale to Other Wholesale Markets. Prices at the Tokyo Central Wholesale Market are not necessarily higher than those at other markets, and they may also occasionally fall below the average prices of other wholesale markets. This study reveals that price differentials for the same commodities in different wholesale markets can often be large and are worthy of special note when exporting tuna to Japan.

Direct Sales to Supermarket Chains. Major supermarket chains handle huge amounts of retail business of tuna products in Japan, particularly those value-added products which appeal to the emerging consumer preference for convenience, high-quality, and health implications. Since these retailers are powerful enough to use their own independent suppliers, they represent additional potential buyers other than wholesale markets.

1. INTRODUCTION

In the face of rising fuel costs, the high costs of its domestic labor, and mounting international competition, Japan's tuna fleet has been continuously adapting to changing times over the past two decades. In order to modernize its fleet into one that is lean and productive, the industry decommissioned as many as 524 vessels between 1976 and 1987, while enhancing both the tonnage and equipment for its fleet. As of 1990, the Japanese tuna fleet was still the world's largest in terms of tonnage and number of vessels as well as landings. Its distant-water tuna fleet had 894 vessels with a total tonnage of 270,511 tons in that year, while its offshore fleet had 607 vessels with 44,817 total tonnage (Suisan-Sha, 1990 & 1991).

Between 1985 and 1990, Japan's tuna fishery managed to supply an average of 690,000 tons to its domestic market, as much as 74 percent of the total annual supply for the country, the world's largest tuna consumer. However, production by Japan's tuna fleet has been declining noticeably in recent years. After falling two years in a row in 1989 and 1990, the production in 1990 of 563,000 tons fell below the 600,000-ton level for the first time. A high of 792,000 tons was achieved only 6 years ago in 1984.

Japan's tuna fishery, which faces a number of difficult challenges today, is said to be at a crossroads due mainly to the following new developments:

1. Competition from Korea and Taiwan has intensified considerably as these countries have successfully begun to practice low-cost production skills while shifting their focus to high-quality tuna for export to Japan. Korea has embarked on an ambitious expansion program for its tuna fleet and even begun hiring experienced Japanese tuna skippers to learn Japanese technology (Suisan Keizai Shinbun, December 19, 1988; July 25, 1990).

2. Japan's distant-water tuna fishery has suffered relatively little from the one worldwide proliferation of 200-mile exclusive economic zones, since the fishery for tuna generally operates in international waters. However, international regulations on catch quotas for tuna are on the rise, as the idea of controlling tuna resources in international waters is rapidly becoming a dominant trend. Already, strict catch limitations are in place for the scarce bluefin. The feeling that tuna resources are being exploited to their limit could put even stricter brakes on further increases in catches, making it increasingly difficult for Japan's distant-water tuna fishermen to secure tuna fishing grounds in international waters (Suisan Keizai Shinbun, July 25, 1990; January 16 & July 26, 1991).

3. Lack of experienced labor for distant-water operations is already plaguing Japan's tuna fishery. Existing labor is aging, with no prospect for replacement through domestic recruitment. Japan has already begun hiring foreign labor to man their tuna boats (Suisan Keizai Shinbun, July 28, 1989; July 23, 1991).

4. High cost of production. A tuna boat takes about 50 days to cover the distance from Las Palmas, Canary Islands, to Japan, costing nearly 7,000 dollars a day or as much as 250,000 dollars for each trip (Suisan Keizai Shinbun, July 25, 1990).

5. A sharp increase in imports has led to increased influence of imports on the price of tuna in domestic markets. Japan's imports of tuna have skyrocketed in recent years, nearly tripling in both volume and value between 1984 and 1990. As much as 35 percent of domestic consumption of raw tuna, the most important segment of the Japanese market, is now supplied by imports, and this proportion is expected to rise in the years ahead, as landings by its own fleet continue to decline. As the imports increased, so did the fluctuation in tuna prices, destabilizing the market. With the objective of keeping unexpected fluctuations in the domestic tuna market to a minimum, an organization named "Tuna Supply and Demand Research Council" was inaugurated in April, 1989. The council issues quarterly forecasts of supply and demand for tuna in Japan (Suisan Keizai Shinbun, January 30, 1991; Nikkan-Shokuryo Shinbun, January 7, 1989 & March 31, 1990; Minato Shinbun, March 31, 1990; Suisan Tsushin, April 27, 1991).

The Japanese tuna market deserves attention due to the simple fact that it is huge, with annual imports close to a billion dollars. Just as important, it has been growing at an enormous rate, an average 17 percent during the 7-year period through 1990. Underlying this steady quest for tuna imports to Japan is the sharp rise in expendable per capita income by the consumers of this affluent nation. During the 1980's, consumer preference for food shifted to those which offered such virtues as convenience (fast-food and packaged foods), a gourmet image and healthy wholesome food (Tokyo Univ. of Fisheries, 1989, Suisan Keizai Shinbun, January 30, 1990; July 29, 1991).

The Japanese tuna market thus offers both challenges and opportunities for the U.S. tuna industry. While the United States has secured a niche in this market, it is mainly through the export of fresh bluefin tuna, which remains relatively small in value in proportion to the total potential market that can be exploited. The purpose of this report is to present a detailed examination of the Japanese tuna fishery and market, to attempt to better identify potential opportunities for export of U.S. products, and to develop strategies which may help increase such efforts.

2. WORLD TUNA FISHERIES

From 1983 to 1989, total world catches of major tuna species (skipjack, yellowfin, bigeye, albacore and bluefin) increased by 45 percent, from 1.8 million metric tons (tons) to 2.6 million tons (Table 1). At this rate of steep increase, the annual world catches may soon surpass 3 million tons.

Eight countries landed more than 100,000 tons of tuna since 1986. In 1989, the year for which the latest world landing data are available, these countries were, in order of landing volume, Japan (26 percent of the world total), Spain (10 percent), the United States (9 percent), Indonesia (6 percent), and France, Korea, Mexico, and the Philippines (all 5 percent) (Table 1).

Table 1. World Tuna Catch*, by Major Countries, 1983-1989 (1,000 Metric Tons)

Country	1983	1984	1985	1986	1987	1988	1989
Japan	693	792	686	781	691	753	670
Spain	127	155	178	186	197	234	250
U.S.A.	266	264	233	252	283	276	245
Indonesia	103	111	121	125	144	147	159
France	85	88	102	113	125	153	142
Korean, Rep	89	71	92	110	131	148	141
Mexico	38	77	92	103	112	124	136
Philippines	119	104	125	137	126	116	127
Venezuela	57	62	65	63	76	76	79
Maldive	26	39	49	50	49	65	64
Ecuador	21	31	35	41	36	36	42
Solomon Isl.	34	36	31	41	31	45	41
Ghana	33	32	34	35	36	33	33
Brazil	21	18	28	15	14	20	26
Panama	14	24	26	30	34	14	22
Sri Lanka	23	18	19	22	20	20	21
Portugal	5	8	8	12	13	16	13
Fiji	9	7	6	4	12	14	9
Australia	21	15	15	13	11	11	6
Total**	1,792	2,134	2,132	2,362	2,369	2,512	2,607

* Tuna catch includes albacore, yellowfin, bigeye, bluefin and skipjack.
** Total also includes other countries not listed.

Data sources: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol 66 & 68; Ministry of Agriculture, Forestry & Fishery, Government of Japan, 1982 & 1990; Suisan Tsushin, June 4, 1990

During 1983-89, Japan's tuna production averaged about 0.7 million tons annually. During this period, the catch was essentially level, although it dropped sharply to 563,000 tons in 1990. The percentage of Japan's catches relative to the global total has been substantial, but has steadily declined from nearly 40 percent in 1983 to about 26 percent in 1989. The U.S. landings of tuna during this period were relatively steady, at around 250,000 tons annually. As a result, the percentage relative to the global total has declined, from about 15 percent in 1983 to about 9 percent in 1989. The United States, historically the world's second largest producer of tuna, dropped to No. 3 in 1989, behind Japan and Spain (Table 1).

The global increase in tuna landings during recent years was therefore due to increased catches by countries other than Japan and the United States. Countries with substantial increase in tuna landings during this period are Spain, Mexico, France, Indonesia, Republic of Korea, Maldive, and Venezuela. Combined tuna landings by these seven countries rose from 525,000 tons in 1983 to 971,000 tons in 1989, respectively about 29 percent and over 37 percent of the world total, an 85 percent increase over this period.

In terms of landing, two leading species are skipjack and yellowfin. Between 1983 and 1989, skipjack accounted for 43 to 45 percent of total landings of major tuna species, and yellowfin, 30 to 35 percent. Landings of other species were small, only 9 to 11 percent for both bigeye and albacore, and 2 to 5 percent for northern bluefin and southern bluefin combined (Table 2).

Table 2. World Tuna Catch, by Major Species, 1983-1989 (1,000 Metric Tons)

Species	1983	1984	1985	1986	1987	1988	1989
Skipjack	774	1,066	908	1,067	1,017	1,242	1,180
Yellowfin	534	614	731	794	879	863	906
Bigeye	200	211	243	253	247	187	229
Albacore	201	170	177	186	169	171	243
Bluefin	83	73	73	62	57	49	49
Total	1,792	2,134	2,132	2,362	2,369	2,512	2,607

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 66 & 68

There has been a tremendous increase in landings of skipjack and yellowfin since 1983, while landings for bigeye and albacore essentially stagnated and those for bluefin declined during this period. In fact, 96 percent of the increase during this period was the result of increase in landings of skipjack and yellowfin. More specifically, skipjack landings rose from 774,000 tons in 1983 to 1,180,000 in 1989, an increase of about 52 percent, which accounted for about 50 percent of the increase for all major species during the same period. Yellowfin landings rose 70 percent from 534,000 tons in 1983 to 906,000 tons in 1989, accounting for about 46 percent of the increase for all major species during the same period. Approximately 60 to 67 percent of the skipjack were caught in the western Pacific regions during the 1986-89 period (FAO Yearbook of Fishery Statistics, Vol. 68).

3. JAPAN'S TUNA FISHERY

The tuna fishery is the single most important fishery in Japan in terms of value, although it ranks fourth behind sardine, pollock, and squid in volume (Table 3). In 1989, the year in which the latest data on landing value is available, Japan's tuna landings were valued at nearly 2.8 billion dollars, approximately 20 percent of Japan's total fishery landings for that year. In retail value, this was worth around a trillion yen (8 billion dollars) (Suisan Keizai Shinbun, July 25, 1990; Minato Shinbun, March 31, 1990).

Table 3. Japan's Marine Fisheries Catch, by Major Species, 1988-1989

Species	1988			1989		
	10^3 Tons	¥10^9	10^6	10^3 Tons	¥10^9	10^6
Tuna	753	362	2,826	670	381	2,782
Squid	657	318	2,487	720	224	1,634
Salmon	167	119	932	192	108	786
Pollock	1,259	87	678	1,154	82	596
Sardine	4,488	83	651	4,416	75	552
Mackerel:						
Jack	228	65	507	181	62	453
Chub	649	49	385	527	42	307
Total*	11,588	1,966	15,363	10,439	1,954	14,264

* Total also includes other species.
Conversion rate: 128 yen = US$1 for 1988, 137 yen = US$1 for 1989

Data sources: Suisan Tsushin, November 28 & 30, 1990
FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

Approximately half of Japan's tuna landings are skipjack (Table 4). Japan's skipjack landings fluctuated between about 46 percent and 58 percent and averaged 51 percent of the total tuna landings between 1977 and 1990. This is more than double the landings of the next important species, bigeye, which averaged approximately 20 percent, and more than triple those of the third-ranking yellowfin which averaged 16 percent. The average landings during the same period for albacore was 9 percent, and those for bluefin 5 percent.

Tendencies for declining catches are recognized for all species in recent years. Landings of skipjack suffered a setback for two consecutive years between 1988 and 1990, declining 31 percent during this period, i.e. from 434,000 tons in 1988 to 338,000 tons in 1989 and further to 299,000 tons in 1990. Continuous decline of landings also occurred for bigeye for 4 years since 1986 (a loss of 33 percent during the period), for yellowfin for 5 years since 1985 (a loss of 31 percent during the period), for albacore for 6 years since 1984 (a loss of 31 percent during the period), and for bluefin for 9 years since 1981 (a loss of as much as 78 percent during the period) (Table 4).

Table 4. Japan's Tuna Catch, by Major Species, 1977-1990 (1,000 Metric Tons)

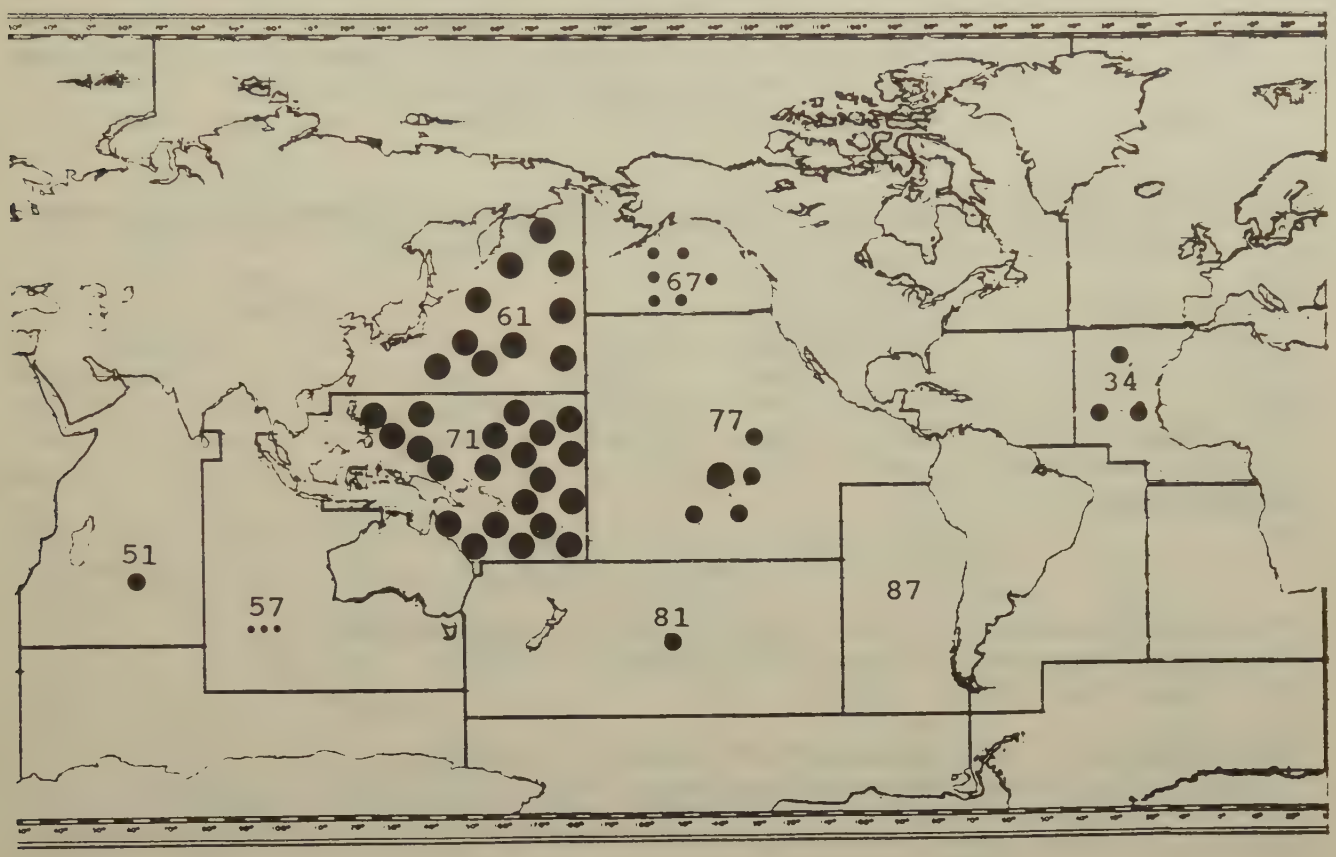
Species	1977	1978	1979	1980	1981	1982	1983
Skipjack	309	370	330	354	289	303	353
Bigeye	128	128	130	123	111	132	139
Yellowfin	83	98	100	119	110	114	112
Albacore	54	88	67	70	64	70	52
Bluefin	52	47	44	50	58	44	37
Total	626	731	671	716	632	663	693

Species	1984	1985	1986	1987	1988	1989	1990
Skipjack	446	315	412	331	434	338	299
Bigeye	131	149	170	161	144	149	114
Yellowfin	115	134	125	122	111	113	93
Albacore	64	58	50	50	45	48	44
Bluefin	36	30	24	27	19	22	13
Total	792	686	781	691	753	670	563

Sources: FAO Yearbook of Fishery Statistics, Catches & Landings, Vol 50, 56, 62, 66 & 68; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1982 & 1990; Suisan Tsushin, June 4, 1991.

Nearly all of Japan's skipjack catch (99 - 100 percent) takes place in the Pacific Ocean (Figure 1 and Table 5), where annual catches have fluctuated between 320,000 and 430,000 tons, with an average of 376,000 tons, from 1986 through 1989.

Figure 1. Disribution of Japan's Skipjack Tuna Catch, by Major FAO Fishing Area, 1989



● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
· 10 Metric Tons

Table 5. Distribution of Japan's Skipjack Catch, by Major FAO Fishing Area, 1986-1989

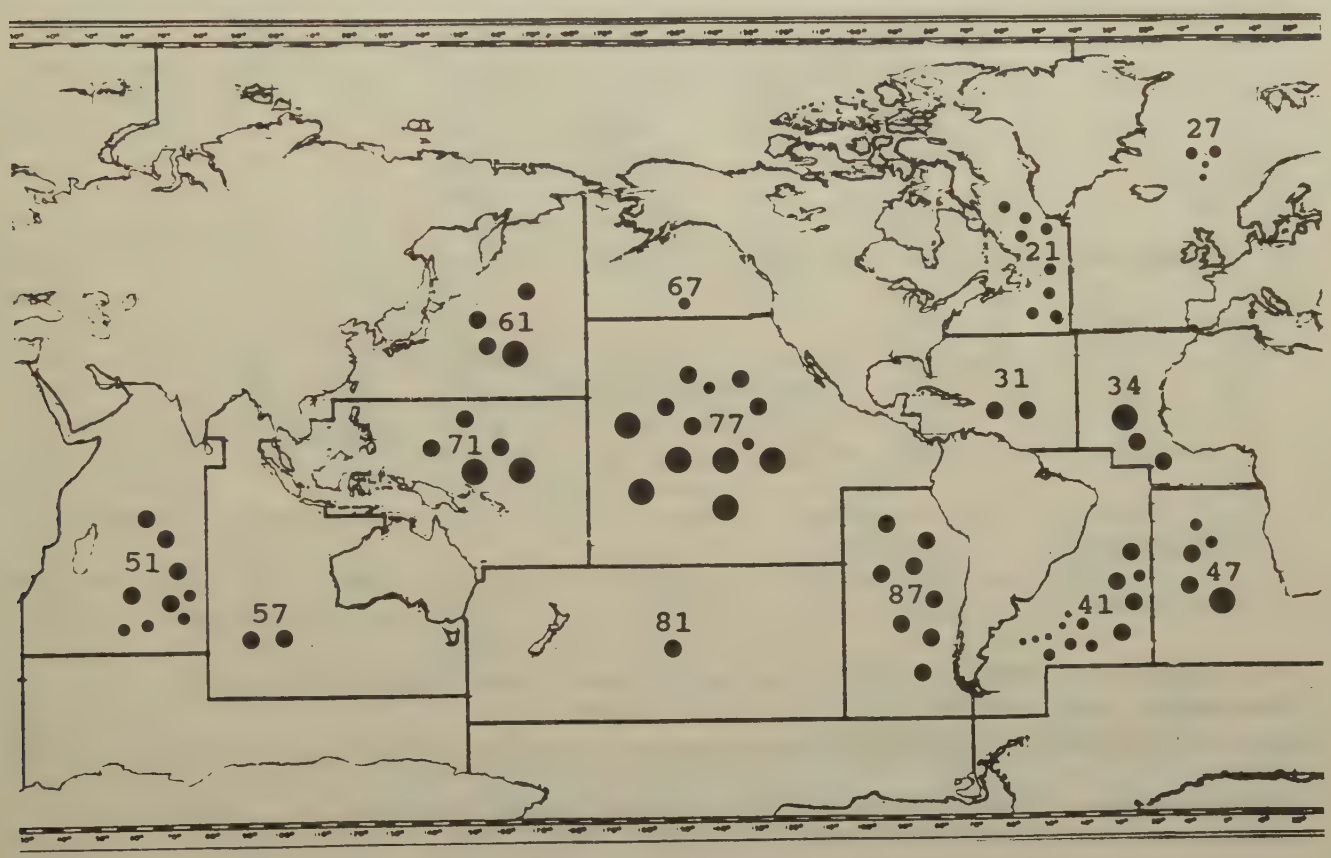
Area*	Catch (Metric Tons) 1986	1987	1988	1989	% of Total Skipjack 1986	1987	1988	1989
Pacific Ocean								
71	222,225	194,121	254,701	209,594	54	59	59	62
61	166,964	118,491	158,709	109,646	41	36	37	32
77	22,367	15,672	12,461	13,868	5	5	3	4
81	18	179	124	1,017	--	--	--	--
67	176	45	3,083	660	--	--	1	--
87	10	4	47	1	--	--	--	--
Total**	411,760	328,512	429,125	334,786	100	100	99	99
Atlantic Ocean								
Total**	--	1,329	3,174	2,542	--	--	1	1
Indian Ocean								
51	378	762	1,936	798	--	--	--	--
57	3	315	156	25	--	--	--	--
Total**	381	1,077	2,092	823	--	--	--	--
Grand Total	412,144	330,918	434,391	338,151	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 1).
** Total may not add due to rounding.
-- Less than one.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

The bulk of Japan's catches of bigeye tuna, between 69 and 78 percent from 1986 through 1989, occurred in the Pacific Ocean, followed by the Atlantic Ocean (12 to 22 percent), and the Indian Ocean (5 to 10 percent). Although the Atlantic Ocean has not been a major bigeye producing region, considerable growth in regional landings has occurred for this species in the past few years. The landings in the region increased by 34 percent from 23,000 tons in 1986 to 31,000 tons in 1989 (Table 6 and Figure 2). The decrease in bigeye landings during 1986 through 1989 was the result of a setback in both the Pacific and Indian Oceans.

Figure 2. Disribution of Japan's Bigeye Tuna Catch, by Major FAO Fishing Area, 1989



● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
· 10 Metric Tons

Table 6. Distribution of Japan's Bigeye Tuna Catch, by Major FAO Fishing Area, 1986-1989

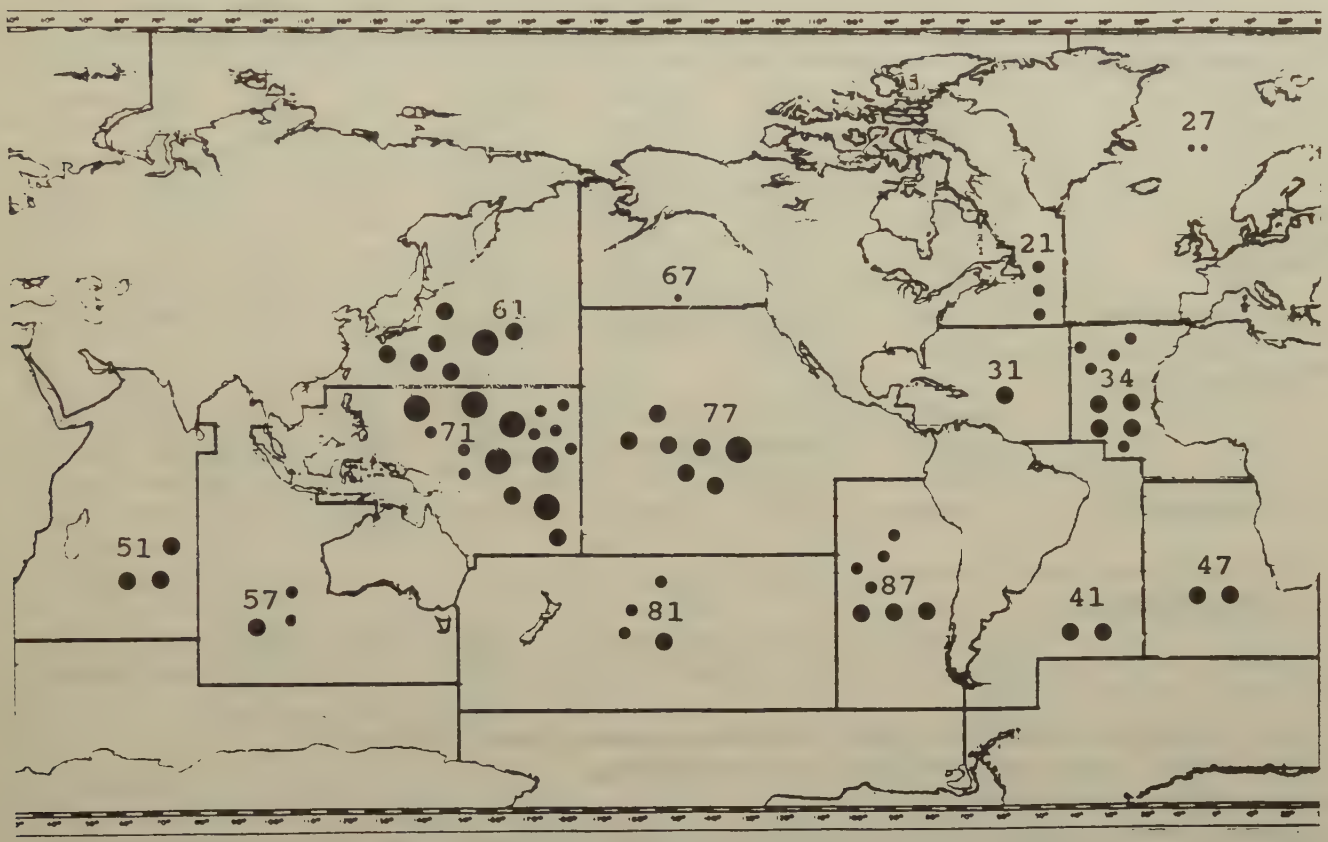
Area*	Catch (Metric Tons)				% of Total Bigeye			
	1986	1987	1988	1989	1986	1987	1988	1989
Pacific Ocean								
77	83,014	78,218	63,886	65,175	49	49	44	44
71	22,548	25,937	14,551	22,927	13	16	10	15
61	9,489	10,198	13,575	12,799	6	6	9	9
87	12,969	10,026	5,924	8,445	8	6	4	6
81	1,369	1,395	1,186	834	1	1	1	1
67	1	42	68	56	--	--	--	--
Total**	129,390	125,816	99,190	110,246	76	78	69	74
Atlantic Ocean								
47	11,402	8,186	13,013	12,184	7	5	9	8
34	6,271	6,223	12,618	11,965	4	4	9	8
41	2,429	2,392	4,257	4,556	1	1	3	3
31	521	398	546	1,708	--	--	--	1
21	2,786	1,908	1,610	853	2	1	1	1
27	71	231	206	225	--	--	--	--
Total**	23,480	19,338	32,250	31,491	14	12	22	21
Indian Ocean								
51	11,780	10,587	9,181	5,415	7	7	6	4
57	5,112	4,836	3,251	1,629	3	3	2	1
Total**	16,892	15,423	12,432	7,045	10	10	9	5
Grand Total	169,762	160,577	143,872	148,782	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 2).
** Total may not add due to rounding.
__ Less than one percent.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

The bulk of Japan's yellowfin catches, i.e. 84 to 88 percent during 1986 through 1989, occurred in the Pacific Ocean, with less than 10 percent occurring each in the Atlantic and Indian Oceans (Table 7 and Figure 3). The recent decline in Japan's yellowfin catch has resulted from reduced catches in the regions surrounding the equatorial Pacific and in the Indian Ocean (FAO fishing areas 71 and 77), which was too big to be offset by small increases that occurred in the Atlantic Ocean during the same period.

Figure 3. Disribution of Japan's Yellowfin Tuna Catch, by Major FAO Fishing Area, 1989



● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
· 10 Metric Tons

Table 7. Distribution of Japan's Yellowfin Tuna Catch, by Major FAO Fishing Area, 1986-1989

Area*	Catch (Metric Tons) 1986	1987	1988	1989	% of Total Yellowfin 1986	1987	1988	1989
Pacific Ocean								
71	72,234	74,503	53,669	62,818	58	61	48	56
61	12,130	14,326	20,180	16,085	10	12	18	14
77	20,345	15,100	13,213	15,607	16	12	12	14
87	1,917	1,538	3,466	3,613	2	1	3	3
81	1,091	1,687	2,337	1,377	1	1	2	1
67	1	4	40	12	--	--	--	--
Total**	107,718	107,168	92,905	99,500	87	88	84	88
Atlantic Ocean								
34	2,801	3,567	4,684	4,476	2	3	4	4
47	714	1,276	1,877	1,878	1	1	2	2
41	1,168	738	1,633	1,697	1	1	1	2
31	393	244	417	970	--	--	--	1
21	490	605	650	301	--	1	1	--
27	18	20	42	18	--	--	--	--
Total**	5,584	6,450	9,303	9,340	4	6	8	9
Indian Ocean								
51	8,424	5,263	6,413	2,506	7	4	6	2
57	2,917	2,870	2,487	1,234	2	2	2	1
Total**	11,341	8,133	8,900	3,740	9	6	8	3
Grand Total	124,643	121,751	111,108	112,596	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 3).
** Total may not add due to rounding.
-- Less than one percent.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

Between 92 and 95 percent of Japan's albacore catches during 1986 through 1989 occurred in the Pacific Ocean, particularly in the northwest, western central and eastern central Pacific Ocean (FAO fishing areas 61, 71, and 77) (Table 8 and Figure 4). The Atlantic and Indian Oceans accounted for less than 5 percent each. Much of the recent decline in Japan's albacore catches was associated with reduced catches in the western central Pacific (FAO fishing region 71), and, to a lesser extent, in the Indian and Atlantic Oceans.

Figure 4. Disribution of Japan's Albacore Tuna Catch,by Major FAO Fishing Area, 1989

● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
· 10 Metric Tons

Table 8. Distribution of Japan's Albacore Tuna Catch, by Major FAO Fishing Area, 1986-1989

Area*	Catch (Metric Tons) 1986	1987	1988	1989	% of Total Albacore 1986	1987	1988	1989
Pacific Ocean								
61	25,897	26,912	22,954	25,171	52	53	51	52
71	9,772	9,289	4,824	6,609	20	18	11	14
81	2,219	2,886	3,128	6,059	4	6	7	13
77	5,821	6,168	9,201	5,506	12	12	20	11
67	1,633	1,060	1,963	1,802	3	2	4	4
87	369	634	588	308	1	1	1	1
Total**	45,711	46,949	42,658	45,455	92	93	94	95
Indian Ocean								
57	1,173	1,034	489	623	2	2	1	1
51	1,162	872	682	381	2	2	2	1
Total**	2,335	1,906	1,171	1,004	4	4	3	2
Atlantic Ocean								
47	905	747	407	485	2	1	1	1
41	499	235	272	428	1	1	1	1
21	416	402	632	218	1	1	1	1
31	17	50	25	202	--	--	--	--
34	35	19	38	88	--	--	--	--
27	9	25	40	82	--	--	--	--
Total**	1,881	1,478	1,414	1,503	4	3	3	3
Grand Total	49,927	50,333	45,243	47,962	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 4).
** Total may not add due to rounding.
-- Less than one percent.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

The recent decline in Japan's total bluefin landings has resulted almost entirely from the reduced catches of northern bluefin (Table 9 and 10). As a result, while Japan's bluefin landings in 1986 consisted of 56 percent southern bluefin and 44 percent northern bluefin in 1989, this ratio shifted to 62 percent southern and 38 percent northern bluefin. In 1989, the major fishing regions for southern bluefin were the Indian Ocean (accounting for 66 percent of the catch), the southeast Atlantic Ocean (20 percent), and the southwest Pacific (14 percent) (Figure 5). In the same year, the major fishing grounds for northern bluefin were the northwest Pacific Ocean (62 percent) and the western central Pacific (23 percent) (Figure 6). Much of the reduction in Japan's bluefin landings in recent years was the result of the reduced catches of northern bluefin in the northwest Pacific Ocean (FAO fishing area 61), its main fishing area. Catches of northern bluefin tuna rose sharply in the western central Pacific (FAO area 71) in 1989, but the increase was not enough to offset the major decline which occurred in area 61.

Table 9. Distribution of Japan's Southern Bluefin Tuna Catch, by Major FAO Fishing Area, 1986-1989

	Catch (Metric Tons)				% of Total S.Bluefin			
Area*	1986	1987	1988	1989	1986	1987	1988	1989
Indian Ocean								
57	7,182	6,422	5,011	6,280	53	46	43	47
51	1,986	1,992	3,244	2,634	15	14	28	20
Total**	9,168	8,414	8,255	8,914	68	60	70	66
Atlantic Ocean								
47	2,535	3,696	2,342	2,630	19	26	20	20
41	20	4	2	1	--	--	--	--
Total**	2,555	3,700	2,344	2,631	19	26	20	20
Pacific Ocean								
81	1,754	1,890	1,120	1,924	13	14	10	14
71	--	--	--	1	--	--	--	--
87	--	--	3	1	--	--	--	--
Total**	1,754	1,890	1,123	1,926	13	14	10	14
Grand Total	13,477	14,004	11,722	13,471	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 5).
** Total may not add due to rounding. -- Less than one.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

Figure 5. Disribution of Japan's Japan's Southern Bluefin Tuna Catch, by Major FAO Fishing Area, 1989

● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
• 10 Metric Tons

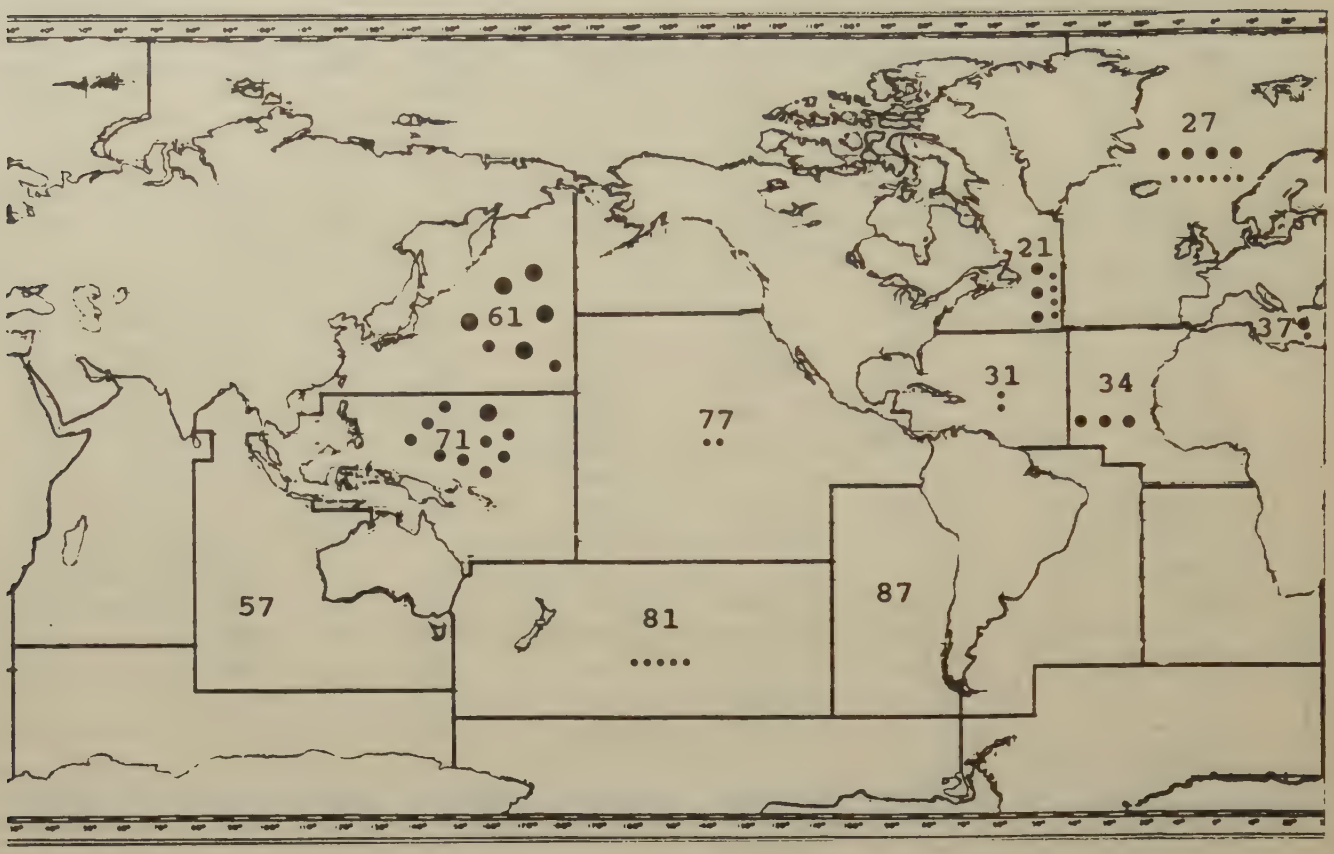
Table 10. Distribution of Japan's Northern Bluefin Tuna Catch, by Major FAO Fishing Area, 1986-1989

Area*	Catch (Metric Tons) 1986	1987	1988	1989	% of Total N.Bluefin 1986	1987	1988	1989
Pacific Ocean								
61	8,925	10,258	4,996	5,188	83	81	65	62
71	23	28	3	1,909	--	--	--	23
81	33	29	27	45	--	--	--	--
77	3	12	10	20	--	--	--	--
Total**	8,984	10,327	5,036	7,162	84	82	65	85
Atlantic Ocean								
27	369	234	606	459	3	2	8	5
21	699	985	1,270	338	7	8	16	4
34	322	770	555	302	3	6	7	4
37	341	310	236	108	3	2	3	1
31	9	13	25	17	--	--	--	--
Total**	1,740	2,312	2,692	1,224	16	18	35	15
Indian Ocean								
57	--	--	--	2	--	--	--	--
Total**	--	--	--	2	--	--	--	--
Grand Total	10,724	12,639	7,728	8,386	100	100	100	100

* Numbers refer to FAO fishing areas (see Figure 6).
** Total may not add due to rounding.
-- Less than one.

Data source: FAO Yearbook of Fishery Statistics, Catches and Landings, Vol. 68

Figure 6. Disribution of Japan's Northern Bluefin Tuna Catch, by Major FAO Fishing Area, 1989



● 10,000 Metric Tons
● 1,000 Metric Tons
• 100 Metric Tons
· 10 Metric Tons

4. WORLD TUNA IMPORTS

Major tuna importers in the world are listed in Table 11 for import volume and in Table 12 for import value, as of 1988, the latest year in which world import data are available. Tuna is an important commodity in the international market. In 1988, the global total of tuna imports was 1.48 million tons in volume, 59 percent of the world total landings, and 3.2 billion dollars in value.

The United States led the world in import volume for all types of products combined (Table 11), but Japan was the leading importer in value (Table 12). In 1988, the United States imported 18 percent in volume and 16 percent in value. In the same year, Japan imported 17 percent in volume and 29 percent in value. This contrast is due mainly to the fact that Japan's imports were concentrated on high-valued products for raw consumption, mainly fresh and frozen tuna. It is particularly noteworthy that the United States led the rest of the world in imports of prepared products (canned tuna) both in volume and value by a wide margin. It accounted for 30 percent in volume and 28 percent in value in this category.

Table 11. Tuna Imports by Major Countries, by Volume, 1988 (Metric Tons)

Country	Fresh	Frozen	Prepared	Total
U.S.A.	---	171,655	96,249	267,904
Thailand	2,328	256,291	578	259,197
Japan	35,660	211,612	4,049	251,321
Spain	1,394	124,196	1,686	127,276
Italy	29,465	84,080	9,284	122,829
Total, World	160,405	1,002,768	317,331	1,480,504

--- Less than one metric ton

Data source: FAO Yearbook of Fishery Statistics, Commodities, Vol. 67

Japan led the world in imports of fresh products in both volume and value, and of frozen products in value. In the category of fresh products, Japan was followed closely by Italy which accounted for about 18 percent in volume and 13 percent in value. It is noteworthy that the U.S. imports of fresh products were virtually nil. Whereas Japan's imports of fresh products in value was as much as 60 percent of the world total, its share in volume was only 22 percent. This

was because Japan's imports of fresh tuna included high-valued bluefin tuna air-shipped from various parts of the world.

Thailand led the world in imports of frozen products in volume, with about 26 percent of the world total, but its share in value in this category, at about 25 percent, is behind Japan's 36 percent. Again, Japan's imports of frozen tuna included high-valued tuna for raw consumption, whereas Thailand's imports consisted largely of less expensive materials with which to manufacture canned tuna products. Other major importers of frozen products were the United States (17 percent in volume and 15 percent in value), Spain (12 percent in volume and 7 percent in value), Italy (8 percent in both volume and value), in that order (Table 11 and 12).

Table 12. Tuna Imports by Major Countries, by Value, 1988 (US $1,000)

Country	Fresh	Frozen	Prepared	Total
Japan	242,363	676,331	15,299	933,993
U.S.A.	---	277,610	248,305	525,915
Thailand	1,772	470,653	2,486	474,911
Italy	52,558	146,189	40,516	239,263
Spain	3,002	134,777	7,691	145,470
Total, World	401,191	1,902,711	902,040	3,205,942

--- Less than one thousand dollars

Data source: FAO Yearbook of Fishery Statistics, Commodities, Vol. 67

5. JAPANESE MARKET

Overview

One of the distinct characteristics of Japanese markets is the fact that this nation, which uses the largest amounts of tuna in the world (about 800,000 tons a year, or about 30 percent of annual global landings), supports its demand with the world's largest imports (nearly a billion dollars) as a single nation. In volume, imports into Japan represent as much as 35 percent of its demand, and this proportion is likely to increase even further (Suisan Keizai Shinbun, January 16, 1991).

Uniquely, Japan is the only major market for raw consumption of tuna, and this market is huge. For example, in 1988, the latest year in which the information is available, about 400,000 tons of tuna was

used for raw consumption, and, interestingly, as much as about 35 percent of the domestic raw consumption of tuna was supplied from imports (Nikkan-Shokuryo Shinbun, January 7, 1989).

Japan's tuna import regulations were first liberalized in 1961. Since then, imports of tuna have steadily increased in Japan. The trend for rising tuna imports into Japan appeared to escalate in recent years. During the 1980's, imports of fresh and frozen seafood products into Japan essentially doubled (Minato Shinbun, March 31, 1991), while imports of fresh and frozen tuna increased even more rapidly, 2.8 times in volume and 3.5 times in value. The number of countries supplying tuna to Japan also increased from 21 in 1981 to 61 in 1990 (Suisan Keizai Shinbun, January 16, 1991). When considering the factors which have influenced the recent rise in tuna imports to Japan, dependance of the Japanese tuna market on imports appears to intensify in the years ahead. Chief among such major factors are: the declining catches by Japan's own fishing fleet, the increasing demand for gourmet food by consumers, and the shift in currency exchange rates, i.e. high yen relative to dollars (Suisan Keizai Shinbun, July 25, 1990).

Tuna species used for raw consumption in Japan are: northern bluefin, southern bluefin, bigeye, yellowfin, and skipjack. Bluefin is the most-prized and hence the highest-priced tuna species in the Japanese market, followed by bigeye, yellowfin and skipjack. Depending upon the fish species as well as the quality of the meat and the season, prices of tuna may range widely, from a high of the 10,000 yen/kg level to a low of the 200 yen/kg level.

Bluefin, the largest of all the tuna species, may range up to 9 feet in length, weighing as much as 300 kg. The "toro" (fatty meat) portion of the bluefin tuna meat is rated among the best gourmet food, particularly suited for raw consumption. Bluefin is generally sold to high-class Japanese-style and specialty sushi (various Japanese dishes made with a rice base topped with various ingredients such as raw or cooked seafood) restaurants. The Japanese name for bluefin "Hon Maguro" (meaning "genuine tuna") is indicative of the status this species enjoys in the Japanese market. Southern bluefin has secured its niche in the Japanese market. By virtue of the quality of its meat which closely resembles that of northern bluefin, southern bluefin enjoys a high demand from restaurants and "sushi" outlets (Tokyo University of Fisheries, 1989).

Bigeye, generally weighing around 45 kg, is the only other species than bluefin that provides the "toro" portion in its meat, and the quality of its meat is rated second only to that of bluefin (Tokyo University of Fisheries, 1989). The fish is also landed in the second largest quantity of all the major tuna species, and hence is popular as a year-round substitute for bluefin. The principal distribution outlets of bigeye are specialty "sushi" restaurants, supermarket chains and fish retailers.

Yellowfin is smaller than bigeye, generally weighing between 30 and 40 kg. In contrast to bluefin and bigeye, yellowfin does not

contain "toro" in its meat, and is somewhat less reddish in the meat color, somewhat blander in the taste, and cheaper in price. The fish is also the third-largest landed species of tuna next to bigeye, making it available year-round. These characteristics make yellowfin popular for home consumption, sold at supermarket chains and fish retailers. The fish is also used for frozen and canned exports as light-meat tuna.

Albacore is the smallest of all the tuna species, generally weighing around 15 kg. The fish is almost exclusively used for canned products, but is also sold in smaller quantities in the form of loins at supermarkets for home consumption as steak and "teriyaki" (A Japanese dish made with fish or shellfish that has been marinated in soy sauce and other flavorings, then grilled on skewers or broiled).

IMPORTS

Current Trend

Japan is the world's major importer of tuna. In 1990, Japan imported more than 0.25 million tons of fresh and frozen tuna valued at close to a billion dollars (Tables 13 and 14). Yellowfin and bigeye were the two dominant species, together accounting for as much as 87 percent in both volume and value of total imports. Bluefin was a distant third with 3 percent in volume and 10 percent in value. Albacore and skipjack were the minority species, with combined shares of about 10 percent in volume and 3 percent in value.

Japan's imports have risen sharply in recent years, steadily increasing nearly three times in volume and more than tripling in value from 1981 through 1990. Much of this is due to increased imports of the two dominant species, bigeye and yellowfin, and to a lesser extent, bluefin. Increased imports of these three species accounted for 88 percent in volume and as much as 98 percent in value of the overall increase in tuna imports which occurred over the 10-year period. Imports for bigeye increased 2.0 times in volume and 3.4 times in value, those for yellowfin 3.4 times in volume and 3.1 times in value, and those for bluefin 6.0 times in volume and 11.9 times in value.

In 1990, Japan's imports of fresh, frozen and prepared tuna were approximately 265,000 tons valued at about 981 million dollars. Frozen products were the most dominant form of tuna imports into Japan, representing as much as 81 percent in volume and 66 percent in value. Fresh tuna accounted for 16 percent in volume and 32 percent in value, followed by dried and canned products with about 3 percent in volume and 2 percent in value (Table 15).

Table 13. Japan's Imports of Fresh and Frozen Tuna, by Volume, 1981-1990, (Metric Tons)

Species	1981	1982	1983	1984	1985
Skipjack	6,364	21,720	9,810	799	6,144
Alabcore	1,910	2,997	7,638	3,575	2,583
Yellowfin	39,666	48,192	57,742	48,770	75,396
Bluefin	1,162	1,049	3,855	4,226	4,838
Bigeye	43,875	46,397	52,932	46,651	52,159
Total	92,977	120,355	131,977	104,021	141,120

Species	1986	1987	1988	1989	1990
Skipjack	2,879	3,854	3,420	3,218	25,633
Albacore	2,433	2,992	3,135	2,867	1,808
Yellowfin	66,781	98,106	120,099	110,201	134,360
Bluefin	5,246	5,101	5,838	6,845	6,956
Bigeye	57,778	74,672	77,413	83,313	88,715
Total	135,117	184,725	209,905	206,444	257,472

Table 14. Japan's Imports of Fresh and Frozen Tuna, by Value, 1981-1990, (US$1,000)

Species	1981	1982	1983	1984	1985
Skipjack	6,603	16,631	6,861	439	4,438
Albacore	4,367	5,762	12,382	5,271	3,523
Yellowfin	128,101	136,831	139,260	137,558	150,956
Bluefin	8,210	6,826	18,901	29,517	26,252
Bigeye	129,725	135,339	127,761	159,216	133,289
Total	276,466	301,389	305,165	332,001	318,458

Species	1986	1987	1988	1989	1990
Skipjack	2,260	3,335	3,577	2,740	23,853
Albacore	3,338	4,044	5,594	5,787	3,345
Yellowfin	180,106	248,365	341,997	349,143	395,419
Bluefin	44,874	47,845	86,296	90,615	97,948
Bigeye	188,332	275,965	359,895	472,558	436,199
Total	418,910	579,554	797,359	920,843	956,764

Source: Japan Marine Products Impporters Association, 1981-1991

Table 15. Japan's Imports of Tuna, by Product Form, 1989-1990

Product Form	Volume (Tons) 1989	Volume (Tons) 1990	Value (US $1,000) 1989	Value (US $1,000) 1990
Fresh:				
Yellowfin	22,180	26,658	119,834	158,591
Bigeye	12,246	11,818	79,504	83,570
Bluefin	2,759	2,999	58,824	68,934
Albacore	92	129	538	578
Skipjack	7	4	26	6
Other	1	3	12	20
Total	37,285	41,611	258,738	311,699
Frozen:				
Bigeye	71,067	76,897	393,054	352,629
Yellowfin	88,021	107,702	229,310	236,828
Bluefin	4,086	3,957	31,791	29,014
Skipjack	3,211	25,629	2,714	23,847
Albacore	2,775	1,679	5,250	2,767
Other	67	46	127	168
Total	169,227	215,910	662,246	645,253
Dried:				
Skipjack	1,440	1,064	6,375	4,438
Canned:				
	4,079	6,898	12,715	19,879
Grand Total	212,031	265,483	940,074	981,269

Source: Japan Marine Products Importers Association, 1980-1991.

Imports of Fresh Tuna

Yellowfin tuna is the dominant species of tuna imported into Japan, both in fresh and frozen categories. A sharp increase in imports of fresh tuna into Japan has been particularly pronounced since 1985. Imports of fresh yellowfin doubled during this time (Table 16), and the rise has been consistent and accelerating, indicating the presence of a stable market for this product in Japan. This is due partly to a recent phenomenon called "fresh food rush" in Japan, the escalation of consumer preference to fresh gourmet food, and partly to the fact that catches of tuna in the domestic waters off Japan have leveled off (Suisan Keizai Shinbun, July 25, 1991 & July 26, 1991). In general, the supply of highly prized tuna meat called "toro" which typically comes from bluefin tuna, has dwindled sharply, whereas the supply of so-called "akami" (meaning "red meat") fish, typically lean loins of yellowfin and bigeye, has become the dominant portion of the supply. Although the "fresh food rush" has

affected all three species, sales of yellowfin have shown the greatest increases.

More than 30 countries have supplied fresh tuna to Japan in recent years. Taiwan has been consistently the leading supplier of fresh yellowfin and bigeye tuna to Japan (Tables 16 and 17). Indonesia has emerged as the No. 2 supplier of both of these products in the past 2 to 3 years, but it is believed that these products have been caught by Taiwanese vessels and shipped through Indonesia. The

Table 16. Japan's Imports of Fresh Yellowfin Tuna, by Major Countries, by Volume, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Taiwan	9,600	10,331	10,299	9,994	9,712
Indonesia	---	---	3	20	48
Philippines	445	517	1,388	2,621	2,877
Guam	17	---	---	---	---
Malaysia	---	---	---	---	---
Palau	---	---	---	---	---
Singapore	---	41	27	---	---
U.S.A.	31	6	9	2	1
Australia	2	4	13	79	128
New Caledonia	---	---	---	---	---
Total*	10,109	10,909	11,746	12,718	12,958

Country	1986	1987	1988	1989	1990
Taiwan	10,346	11,599	10,214	10,247	10,982
Indonesia	76	644	1,601	4,040	5,415
Philippines	3,415	3,712	3,919	3,914	3,757
Guam	23	357	332	674	1,968
Malaysia	---	45	442	1,042	1,741
Palau	---	---	---	50	1,273
Singapore	16	208	1,018	1,448	736
U.S.A.	186	332	1,037	321	326
Australia	388	304	144	313	242
New Caledonia	---	3	24	54	108
Total*	14,458	17,260	19,353	22,180	26,658

* Total also includes other countries not listed
--- Less than one metric ton

Source: Japan Marine Products Importers Association, 1980-1991.

Table 17. Japan's Imports of Fresh Bigeye Tuna, by Major Countries, by Volume, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Taiwan	563	671	1,014	1,513	1,875
Indonesia	---	---	2	7	41
Malaysia	---	---	---	---	---
Guam	19	---	---	---	---
Palau	---	---	---	---	---
U.S.A.	1	6	124	147	164
Singapore	---	13	16	---	---
Philippines	520	346	213	173	155
Ecuador	---	---	---	---	---
Reunion	---	---	---	---	---
Total*	1,117	1,040	1,371	1,843	2,250

Country	1986	1987	1988	1989	1990
Taiwan	2,887	6,467	4,921	3,571	2,486
Indonesia	52	518	1,282	3,432	2,378
Malaysia	---	37	280	1,169	1,963
Guam	8	152	367	1,156	1,895
Palau	---	---	---	106	1,221
U.S.A.	335	447	671	830	684
Singapore	25	256	1,116	1,482	620
Philippines	147	236	152	302	291
Ecuador	---	2	2	71	114
Reunion	---	---	---	---	29
Total*	3,474	8,246	9,339	12,246	11,818

* Total also includes other countries not listed.
--- Less than one metric ton.

Source: Japan Marine Products Importers Association, 1980-1991.

same may be said to varying degrees for the shipments from Guam, Palau, and Singapore, among others, which have also sharply increased supplies of fresh tuna to Japan recently.

Taiwan, whose supply of fresh yellowfin to Japan has leveled off at slightly above 10,000 tons per year for the past decade, is expected to continue to remain the dominant supplier to Japan for some time in the future. Supplies of fresh bigeye from Taiwan to Japan, however, have declined continuously since 1988, while

shipments of this product from Indonesia, Malaysia, and Guam have increased sharply (Table 17). It is likely that if the present trend continues, Indonesia may replace Taiwan as the leading supplier of fresh bigeye to Japan even as early as 1991.

Imports of fresh yellowfin and bigeye from the United States have generally been small, holding around 300 tons in 1989 and 1990 for yellowfin (Table 16) and between 700 to 800 tons for bigeye (Table 17).

An important recent trend is the increase in the supply of fresh tuna air-shipped into Japan from overseas sources. Prompted partly by the rise in consumer preference for fresh food, and partly by the fact that the domestic supply of fresh tuna has leveled off, imports of fresh tuna have expanded steadily over the years. In spite of the fact that airlifting adds to the costs, Japanese experts predict continued rise in imports of fresh overseas tuna in years ahead, to such an extent that it may even impact the pricing of frozen tuna in the domestic market (Suisan Keizai Shinbun, July 25, 1990). Japan's imports of fresh bluefin tuna have been particularly pronounced since 1985 (Table 18). In 1990, imports of fresh bluefin tuna into Japan reached nearly 3,000 tons, triple over the 1985 imports.

The United States has been the leading supplier of fresh shipped bluefin tuna to Japan, with annual shipments of about 800 to 900 tons for the past several years. The so-called "jumbo bluefin" caught off New England is the most prized of all tuna products in Japan. Large bluefin tuna caught off Los Angeles made a debut in Japan in 1988, and was considered to be as good in quality as those caught in Japanese domestic waters. However, this new fishing ground is yet to establish itself as a steady source of supply. Other new small fishing grounds have also emerged near Tunisia, Turkey, Morocco, and Greece. Supplies from Spain include pen-held bluefin, which can be shipped throughout the year. Since the supply from the United States has essentially leveled off, the recent rise in imports of fresh bluefin into Japan was entirely the result of increased shipments from these other sources. Consequently, the U.S. share as the supplier of this prized product to Japan has dwindled steadily recently, from 57 percent in 1985 to 27 percent in 1990 in volume.

Imports of Frozen Tuna

Rise in imports of frozen tuna into Japan has been phenomenal in recent years. The trend has been led by yellowfin and bigeye which together supplied the co-called "akami" used in "sashimi" (Japanese name for various kinds of raw seafood, sliced thin and accompanied by condiments) and "sushi". Since 1985, imports of frozen yellowfin rose from about 36,000 tons in 1984 to about 108,000 tons in 1990, (Table 19). During the same period, imports of frozen bigeye rose from about 45,000 tons to about 77,000 tons. These frozen yellowfin and bigeye together represented about 83 percent in volume and about 71 percent in value of the combined fresh and frozen yellowfin and bigeye imported in 1990 (Table 15).

Table 18. Japan's Imports of Fresh Bluefin Tuna, by Major Countries, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
U.S.A.	256	141	503	531	549
Tunisia	---	---	---	---	---
Spain	---	6	---	54	145
Australia	---	10	6	8	5
Canada	177	181	289	164	78
Morocco	---	---	---	---	---
Turkey	---	---	---	1	99
Korea, Rep.	30	31	13	4	1
Taiwan	65	132	118	170	54
Greece	---	---	---	---	6
Total*	533	503	933	957	962

Country	1986	1987	1988	1989	1990
U.S.A.	589	939	856	889	815
Tunisia	---	---	95	225	357
Spain	104	171	389	250	356
Australia	263	72	458	325	345
Canada	25	43	303	454	310
Morocco	---	21	59	170	209
Turkey	669	243	104	156	140
Korea, Rep.	344	89	33	71	132
Taiwan	78	80	52	66	112
Greece	71	54	56	72	84
Total*	2,150	1,723	2,428	2,759	2,999

* Total also includes other countries not listed.
--- Less than one metric ton.

Source: Japan Marine Products Importers Association, 1980-1991.

In 1990, Taiwan became the leading supplier of frozen yellowfin to Japan, passing Republic of Korea which had been the leader for quite some time. Republic of Korea remained the leading supplier of frozen bigeye to Japan, however (Table 20). Imports of frozen bigeye into Japan from Taiwan have risen sharply in recent years, and in 1990 Taiwan's share was close to Republic of Korea's.

Table 19. Japan's Imports of Frozen Yellowfin Tuna, by Major Countries, by Volume, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Taiwan	3,376	3,561	5,654	4,600	7,729
Korea, Rep.	19,053	19,274	26,852	17,250	18,119
Indonesia	1,525	2,467	2,167	2,619	3,606
Mexico	523	67	96	15	---
Panama	1,232	1,585	1,509	1,653	2,922
Honduras	---	---	754	406	526
Solomon Islands	979	2,983	3,925	4,262	5,381
U.S.A.	---	---	375	55	9,720
Guam	---	664	1,319	521	1,050
Singapore	230	575	370	320	281
Total*	29,558	37,283	45,996	36,051	62,438

Country	1986	1987	1988	1989	1990
Taiwan	10,557	20,687	22,705	20,994	37,250
Korea, Rep.	24,143	30,161	38,535	21,343	25,998
Indonesia	3,280	7,252	8,179	10,120	10,738
Mexico	141	5,070	21,227	18,000	5,632
Panama	7,222	5,147	3,431	2,496	4,149
Honduras	956	1,297	2,324	2,635	3,938
Solomon Islands	1,826	2,110	1,948	1,619	3,175
U.S.A.	1,605	3,115	2,904	259	3,100
Guam	16	---	482	892	1,921
Singapore	352	1,297	3,004	1,711	1,860
Total*	52,323	80,846	100,747	88,021	107,702

* Total also includes other countries not listed.
--- Less than one metric ton.

Source: Japan Marine Products Importers Association, 1980-1991.

Republic of Korea and Taiwan together have long been the dominant suppliers of frozen yellowfin and bigeye to Japan. These two nations supplied Japan with as much as about 76 percent of all frozen yellowfin in 1981 but the share declined to about 59 percent in 1990 due to increased imports from Indonesia, Mexico, Panama, Honduras, Solomon Islands, the United States, Guam, and Singapore (Table 19). A total of 17 nations supplied frozen yellowfin tuna to Japan in 1981, but the number has swelled to 44 in 1990. Republic of Korea and Taiwan together also accounted for nearly 88 percent of

frozen bigeye imports into Japan in 1981, but again their share declined to about 68 percent in 1990, as a result of increased imports of this product from Honduras, Panama, Indonesia, Ecuador, Singapore, Portugal, Canary Islands, and U.S.A. (Table 20).

Japanese imports of frozen yellowfin from the United States have tended to increase over the years, with some fluctuation. In 1990, they were 3,100 tons, approximately 3 percent of the total Japanese

Table 20. Japan's Imports of Frozen Bigeye Tuna, by Major Countries, by Volume, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Korea, Rep.	29,059	27,278	30,831	25,985	28,008
Taiwan	8,467	10,732	13,639	11,364	11,725
Honduras	---	---	46	369	354
Panama	2,700	2,670	2,245	3,165	4,461
Indonesia	499	984	1,504	1,672	2,736
Ecuador	658	761	361	24	---
Singapore	926	1,055	836	589	373
Portugal	---	---	---	44	---
Canary Islands	47	---	---	---	---
U.S.A.	49	12	5	26	267
Total*	42,758	45,356	51,561	44,808	49,909

Country	1986	1987	1988	1989	1990
Korea, Rep.	31,811	35,865	33,950	31,447	29,333
Taiwan	14,154	16,118	17,586	18,977	23,990
Honduras	757	1,406	2,155	4,326	5,674
Panama	5,133	5,616	3,847	3,159	5,258
Indonesia	2,535	3,602	3,406	4,935	4,609
Ecuador	361	169	477	859	1,587
Singapore	496	664	1,859	1,180	1,210
Portugal	---	3	---	9	668
Canary Islands	49	---	85	776	621
U.S.A.	9	44	9	6	13
Total*	54,304	66,426	68,074	71,067	76,897

* Total also includes other counties not listed.
--- Less than one metric ton.

Source: Japan Marine Products Importers Association, 1980-1991.

imports of this product. The highest amount ever achieved by the U.S. product was 9,720 tons, occurring in 1985. Japanese imports of frozen U.S. bigeye have been minuscule. totaling only 13 tons in 1990. The historical high for this product was 267 tons, again occurring in 1985.

Japanese imports of frozen bluefin have been essentially stable, generally remaining within a narrow range between 3,000 and 4,000 tons since 1983 (Table 21). This contrasts sharply with the precipitous rise in imports of highly prized fresh bluefin in recent years. More than half of frozen bluefin is imported from Australia. Other major suppliers are Taiwan, Spain and New Zealand. Supply of frozen bluefin from the United States is minuscule, being essentially

Table 21. Japan's Imports of Frozen Bluefin Tuna, by Major Countries, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Australia	41	68	1,964	2,420	3,352
Taiwan	99	138	102	211	100
Spain	147	37	229	97	54
New Zealand	169	252	116	92	85
Portugal	---	---	---	---	---
Venezuela	---	---	---	---	---
Tunisia	---	---	---	---	---
Honduras	---	---	---	---	---
Korea, Rep.	4	1	---	16	63
Panama	---	1	---	---	---
U.S.A.	108	---	83	263	--
Total*	629	546	2,922	3,269	3,877

Country	1986	1987	1988	1989	1990
Australia	2,497	2,798	1,703	2,085	2,444
Taiwan	61	146	243	889	715
Spain	50	95	773	378	338
New Zealand	74	53	84	122	249
Portugal	---	---	---	---	75
Venezuela	---	47	121	19	30
Tunisia	---	---	---	---	25
Honduras	10	98	323	282	18
Korea, Rep.	134	1	11	39	17
Panama	---	66	57	---	12
U.S.A.	230	27	15	6	---
Total*	3,096	3,378	3,410	4,086	3,957

* Total also includes other countries not listed.
--- Less than one metric ton.
Source: Japan Marine Products Importers Association, 1980-1991.

nil in 1990. The historical high of frozen U.S. bluefin imports into Japan was 263 tons achieved in 1984.

In 1990, Japan's imports of skipjack tuna recorded a historical high of 25,629 tons, 8 times the total for 1989. This surge in imports was prompted by an unexpected drop in domestic catches and the consequent rise in price for this species. Sharply increased imports in 1990 came from all suppliers, led by Indonesia, Taiwan, Maldive, Singapore, Solomon Islands, the Philippines, and Republic of Korea. Japanese imports of frozen skipjack from the United States have been insignificant (Table 22).

Table 22. Japan's Imports of Frozen Skipjack Tuna, by Major Countries, 1981-1990 (Metric Tons)

Country	1981	1982	1983	1984	1985
Indonesia	313	1,827	4,327	179	712
Taiwan	96	57	54	17	33
Maldive	2,031	2,996	174	---	3,084
Singapore	10	327	---	17	---
Solomon Islands	2,964	10,293	3,295	78	113
Philippines	49	1,549	3	---	926
France	---	---	---	---	366
Korea, Rep.	217	1,457	745	81	246
Australia	---	56	8	---	---
U.S.A.	---	153	---	4	111
Total*	6,222	21,488	9,776	797	6,144

Country	1986	1987	1988	1989	1990
Indonesia	976	2,301	1,850	2,518	14,269
Taiwan	33	148	477	47	3,552
Maldive	1,179	1,079	951	76	3,068
Singapore	---	---	---	240	1,742
Solomon Islands	515	43	23	119	1,116
Philippines	---	48	---	---	729
France	---	10	---	---	471
Korea, Rep.	78	89	32	164	443
Australia	---	---	---	35	65
U.S.A.	26	43	4	---	3
Total*	2,859	3,823	3,379	3,211	25,629

* Total also includes other countries not listed.
--- Less than one metric ton.
Source: Japan Marine Products Importers Association, 1980-1991.

Tariffs

Imports of tuna products into Japan are subject to tariffs (Table 23). As Japan and the United States are signatories to the General Agreement on Tariffs and Trade (GATT), the lower tariffs apply to U.S. exports of tuna products: 5 percent on fresh or frozen products, 15 percent on prepared or preserved products including products in airtight containers, and 15 percent on salted, smoked or dried products. Tariff rates are calculated as a percentage of CIF (cost, insurance, freight) value.

Table 23. Japanese Tariff Structure for Tuna, 1991 (Percent of CIF Value)

	Fresh/Chilled/ Frozen	Salted/Dried/ Smoked	Prepared/ preserved
GATT	5.0	15.0	15.0
General	10.0	15.0	20.0

Data source: Japan Marine Products Importers Association, 1991

COLD STORAGE HOLDINGS

Table 24 shows Japan's year-end inventory of frozen tuna (cold storage holdings) between 1981 and 1990. The amount of inventory has remained within 45,000 tons to 83,000 tons during this period, with an average of 60,800 tons. The year-end inventories represented between about 5 and 7 percent of the total supply of tuna in the domestic market during following year. Since the amounts of inventory remained relatively stable, and low in percentage of total supplies, they were not a major factor influencing yearly fluctuations in supply and prices.

Table 24. Japan's Year-end Cold Storage Holdings of Frozen Tuna, 1981-1990 (1,000 Metric Tons)

Species	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Skipjack	16	20	23	18	15	22	20	29	17	29
Albacore	3	8	7	6	7	7	9	6	9	11
Bigeye	6	14	11	7	16	14	15	12	13	15
Yellowfin	10	11	10	6	17	11	11	13	10	20
Bluefin	8	8	12	8	8	7	9	6	7	8
Total	46	61	63	45	63	61	64	66	56	83

Source: National Marine Fisheries Service, 1982-1991

Table 25 shows monthly changes in inventory for 1990, as an example. It is seen that the inventory grows throughout the year toward a maximum at the end of December.

Table 25. Japan's Monthly Cold Storage Holdings of Frozen Tuna, 1990 (1,000 Metric Tons)

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Skipjack	16	11	11	14	18	7	21	20	21	20	23	29
Albacore	9	9	9	11	14	10	12	13	12	12	11	11
Bigeye	12	13	15	15	17	17	18	16	16	16	15	15
Yellowfin	11	12	15	17	7	20	21	19	19	20	19	20
Bluefin	7	8	8	8	8	7	7	7	8	9	9	8
Total	55	53	58	65	64	61	79	75	76	77	77	83

Source: National Marine Fisheries Service, 1990-1991

SUPPLY

Japan's supply of tuna for any given year is comprised of three parts: the cold-storage inventory as of January 1, the catch by its own fleets in domestic, distant and foreign waters, and imports (Table 26).

Between 1985 and 1990, the January inventory averaged 59,000 tons (about 6 percent of the total supply, the catch 690,000 tons (about 74 percent), and the imports 189,000 tons (about 20 percent). The catches fluctuated between a high of 781,000 tons and a low of 563,000 tons, but the mitigating effects of imports helped keep the annual supplies relatively stable. Annual supplies during this period ranged between a high of about 1,026,000 tons to a low of 872,000 tons.

With respect to individual species, annual supplies of skipjack ranged between 457,000 and 339,000 tons between 1985 and 1990. In 1990, increased imports of skipjack helped avert a potential sharp decline in annual supply due to a large drop in both catch and inventory for this species in that year. Annual supplies of albacore ranged between 67,000 and 55,000 tons during the same period. Annual supplies of bigeye ranged between 250,000 and 208,000 tons, and those of yellowfin between 242,000 and 209,000 tons. For these two species, the catches declined steadily between 1985 and 1990, but increased imports helped preserve annual supplies. Imports of bigeye rose 71 percent from 52,000 tons in 1985 to 89,000 tons in 1990, and those of yellowfin 79 percent from 75,000 tons in 1985 to 134,000 tons in 1990. Annual supplies of bluefin during the same period

experienced steady decline, from 43,000 tons in 1985 to 27,000 tons in 1990, due mainly to a continuous decline in catches which were not made up for with increased imports.

Table 26. Japan's Tuna Supply and Demand, 1985-1990 (1,000 Metric Tons)

	1985	1986	1987	1988	1989	1990
Inventory, Jan. 1:						
Skipjack	18	15	22	20	29	17
Albacore	6	7	7	9	6	9
Bigeye	7	16	14	15	12	13
Yellowfin	6	17	11	11	13	10
Bluefin	8	8	7	9	6	7
Total	45	63	61	64	66	56
Catch:						
Skipjack	315	412	331	434	338	299
Albacore	58	50	50	45	48	44
Bigeye	149	170	161	144	149	114
Yellowfin	134	125	122	111	113	93
Bluefin	30	24	27	19	22	13
Total	686	781	691	753	670	563
Imports:						
Skipjack	6	3	4	3	3	26
Albacore	3	2	3	3	3	2
Bigeye	52	58	75	77	83	89
Yellowfin	75	67	98	120	110	134
Bluefin	5	5	5	6	7	7
Total	141	135	185	209	206	258
SUPPLY	**872**	**979**	**937**	**1,026**	**942**	**877**
Exports:						
Skipjack	33	57	32	111	49	36
Albacore	7	7	5	11	19	11
Yellowfin	7	5	6	6	4	4
Total	47	69	43	128	72	51
Inventory, Dec. 31:						
Skipjack	15	22	20	29	17	29
Albacore	7	7	9	6	9	11
Bigeye	16	14	15	12	13	15
Yellowfin	17	11	11	13	10	20
Bluefin	8	7	9	6	7	8
Total	63	61	64	66	56	83
DEMAND	**762**	**849**	**830**	**832**	**814**	**743**

Source: National Marine Fisheries Service, 1985-1991; Ministry of Agriculture, Forestry, & Fisheries, Government of Japan, 1982 & 1990; Suisan Tsushin, June 4, 1991.

CONSUMPTION

In Japan, tuna ranks first in consumption of seafood product in value and second in volume (Table 27). In 1990, the average Japanese family spent 10,277 yen (75 dollars) on fresh and frozen tuna. This led the second-place shrimp and the third-place squid by wide margins, 7,889 yen (58 dollars) for shrimp and 5,675 yen (41 dollars) for squid. Expenditure for tuna was more than twice that for yellowtail, more than 3 times for salmon, and about 14 times that on mackerel. In terms of volume, annual per household consumption of fresh and frozen tuna in 1990 was 4 kilograms or 8.8 pounds. This was slightly behind the 5 kilograms for squid, 20 percent more than the third place shrimp, and nearly twice that for mackerel.

Reflecting the recent boom of sales of fresh gourmet foods in Japan, consumption of tuna per average household has been increasing in recent years. From 1988 to 1990, the average per household consumption of tuna rose nearly 8 percent in expenditure and 24 percent in volume. A slight decrease in volume in 1990 (about 2 percent from 1989) was due mainly to a drop in consumption of skipjack (Suisan Tsushin, June 4, 1991).

Table 27. Japan's Annual Per Household Consumption of Fresh and Frozen Fish and Shellfish, by Major Species, 1988-1990

Species	Expenditure (yen)			Quantity (gram)		
	1988	1989	1990	1988	1989	1990
Tuna	9,549	9,925	10,277	3,225	4,077	3,998
Shrimp	7,514	7,849	7,889	3,206	3,446	3,340
Squid	6,170	5,908	5,675	5,983	5,981	5,290
Yellowtail	4,410	4,205	4,712	2,183	1,966	2,321
Salmon	1,872	2,158	2,633	1,134	1,402	1,681
Mackerel*	827	967	750	1,465	1,707	1,232

* Excludes jack mackerel and Spanish mackerel.

Source: Suisan Keizai Shinbun, March 1, 1990 & March 4, 1991

PRICE TREND

Exvessel Prices

Annual average exvessel prices of both fresh and frozen bluefin tuna at 51 landing ports is shown in Table 28, together with annual landing volumes. The exvessel prices at landing ports were generally dominated by the landed volume: the greater the landings, the lower the prices. As shown in Table 28, the lowest price of fresh bluefin,

Table 28. Annual Landings and Average Exvessel Prices of Bluefin Tuna at 51 Landing Ports in Japan, 1979-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1979	13,235	1,127	21,489	2,641
1980	7,482	1,285	27,086	2,058
1981	20,989	887	28,162	2,259
1982	19,539	1,063	17,794	2,958
1983	11,657	1,287	16,375	3,251
1984	2,306	1,906	18,536	3,226
1985	2,535	1,250	18,747	3,059
1986	2,647	1,664	12,814	4,342
1987	3,861	1,234	12,820	3,649
1988	2,571	1,593	9,613	4,326
1989	5,075	1,743	8,574	5,101
1990	1,807	2,848	9,430	4,849

Source: Suisan Tsushin, June 2, 1989, June 5, 1990 & June 5, 1991; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

887 yen/kg, was realized in 1981 when landings were at a high of 20,989 tons. Likewise, with respect to frozen bluefin, the two lowest prices of 2,058 and 2,259 yen/kg, occurring respectively in 1980 and 1981, corresponded to peak landings of 27,086 and 28,162 tons for these years.

The similar trend of inverse relationships between the exvessel prices and the landing volumes at the landing ports was recognized with other species used for fresh consumption such as yellowfin (Table 29), bigeye (Table 30), and skipjack (Table 31), but not with albacore (Table 32) which is used almost exclusively for canned products in Japan. As a result, the time histories of exvessel prices at the landing ports for bluefin, yellowfin, bigeye, and skipjack were essentially mirror images of the history of their landing volumes. Occasional exceptions to this rule occurred with respect to yellowfin and bigeye, the two species which both supply the "akami" meat and appear to be mutually related. For instance, in 1990, the wholesale prices of frozen yellowfin fell 26 percent from 1989, from 771 to 572 yen/kg, which in turn triggered a drop in prices for bigeye by 6 percent, from 1,228 in 1989 to 1,149 yen/kg in 1990, in spite of the fact that the landings of bigeye remained essentially unchanged for these years.

Table 29. Annual Landings and Average Exvessel Prices of Yellowfin Tuna at 51 Landing Ports in Japan, 1979-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1979	25,328	677	34,035	640
1980	26,369	696	44,203	519
1981	19,032	750	51,324	541
1982	13,984	845	64,355	474
1983	18,186	730	59,394	436
1984	19,688	770	39,900	668
1985	25,718	674	34,953	628
1986	13,602	681	32,338	526
1987	15,320	591	29,440	511
1988	14,456	659	27,184	532
1989	15,158	793	24,977	771
1990	14,687	746	32,248	572

Source: Suisan Tsushin, June 2, 1989, June 5, 1990 & June 5, 1991; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Table 30. Annual Landings and Average Exvessel Prices of Bigeye Tuna at 51 Landing Ports in Japan, 1979-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1979	12,015	1,336	79,071	975
1980	11,243	1,257	71,766	831
1981	9,836	1,426	66,129	975
1982	9,777	1,435	75,981	933
1983	9,927	1,473	89,174	847
1984	13,048	1,361	69,954	1,145
1985	12,372	1,380	86,610	917
1986	9,776	1,472	92,563	872
1987	9,059	1,191	89,981	838
1988	6,688	1,629	76,320	1,025
1989	8,167	1,748	73,799	1,228
1990	8,211	1,722	73,178	1,149

Source: Suisan Tsushin, June 2, 1989, June 5, 1990 & June 5, 1991; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Table 31. Annual Landings and Average Exvessel Prices of Skipjack Tuna at 51 Landing Ports in Japan, 1979-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1979	75,978	284	136,334	232
1980	91,744	319	162,037	305
1981	51,094	379	152,302	283
1982	66,318	330	169,473	235
1983	70,282	250	221,606	191
1984	117,925	180	231,134	156
1985	48,082	330	181,881	216
1986	76,256	176	241,471	135
1987	61,953	234	195,522	163
1988	91,602	154	261,908	133
1989	47,612	285	207,974	153
1990	39,784	350	199,138	203

Source: Suisan Tsushin, June 2, 1989, June 5, 1990 & June 5, 1991; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Table 32. Annual Landings and Average Exvessel Prices of Albacore Tuna at 51 Landing Ports in Japan, 1979-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1979	19,471	395	44,655	387
1980	26,338	445	39,601	396
1981	19,264	542	36,003	515
1982	26,613	480	35,086	401
1983	14,888	432	27,563	338
1984	19,364	414	38,866	363
1985	15,775	434	34,840	346
1986	16,142	358	27,140	248
1987	19,177	325	28,060	259
1988	17,099	358	24,262	243
1989	18,357	410	25,789	265
1990	20,040	383	23,270	279

Source: Suisan Tsushin, June 2, 1989, June 5, 1990 & June 5, 1991; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Wholesale Prices

Tables 33 through 37 show annual average wholesale prices at six major central wholesale markets in Japan between 1983 and 1990, in comparison with the arrival volume. The highest price for any species during this period was achieved by fresh bluefin at 4,937 yen/kg in 1990. Bluefin is the only species which exhibited a steady rise in prices during this period, and this trend was particularly pronounced for the fresh product, reflecting the rapidly dwindling supply of this fish. The prices for fresh bluefin more than doubled from 2,200 yen/kg in 1983 to 4,937 yen/kg in 1990. The prices for frozen bluefin rose from 3,240 to 4,293 yen/kg over the same period, an increase of about 33 percent.

Table 33. Arrivals and Average Wholesale Prices of Bluefin Tuna at Six Major Central Wholesale Markets in Japan, 1983-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1983	7,750	2,200	16,025	3,240
1984	3,696	3,051	18,144	3,079
1985	3,565	2,827	18,632	2,998
1986	3,373	3,467	15,204	3,655
1987	3,686	2,975	15,246	3,450
1988	3,798	3,473	15,486	3,749
1989	4,665	3,680	11,103	4,754
1990	3,222	4,937	12,841	4,293

Table 34. Arrivals and Average Wholesale Prices of Yellowfin Tuna at Six Major Central Wholesale Markets in Japan, 1983-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1983	12,328	1,169	26,173	782
1984	14,689	1,201	23,747	967
1985	16,963	1,097	24,181	830
1986	14,692	1,136	29,062	666
1987	13,569	1,100	31,520	657
1988	16,023	1,065	31,379	650
1989	19,265	1,108	23,795	947
1990	21,421	1,156	26,280	732

Source: Suisan Tsushin, June 5, 1988, June 6, 1989 & June 5, 1990; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Table 35. Arrivals and Average Wholesale Prices of Bigeye Tuna at Six Major Central Wholesale Markets in Japan, 1983-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1983	3,838	2,057	55,737	1,070
1984	4,445	1,989	47,800	1,308
1985	4,680	1,881	54,784	1,113
1986	4,320	2,124	67,214	998
1987	5,893	1,803	69,327	987
1988	6,606	1,866	63,692	1,116
1989	6,473	2,162	60,765	1,324
1990	7,007	2,227	58,675	1,337

Table 36. Arrivals and Average Wholesale Prices of Skipjack Tuna at Six Major Central Wholesale Markets in Japan, 1983-1990

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1983	18,822	497	891	498
1984	16,828	552	838	455
1985	25,236	367	812	598
1986	23,931	386	1,082	466
1987	18,773	521	852	603
1988	20,906	440	N/A	N/A
1989	18,341	549	N/A	N/A
1990	15,197	714	N/A	N/A

N/A - not available

Source: Suisan Tsushin, June 5, 1988, June 6, 1989 & June 5, 1990; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

Annual average wholesale prices fluctuated for all species, and, with the exception for albacore, the fluctuations were influenced mainly by the volume of arrivals and, to a lesser extent, by the amount of cold-storage inventory. As a general rule, the greater the arrivals, the lower the prices.

Between 1983 and 1990, the annual average wholesale prices for fresh bluefin averaged 3,326 yen/kg, with a high of 4,937 and a low of 2,200. Frozen bluefin averaged 3,652 yen/kg (range: 2,998 - 4,752). The annual average wholesale prices for fresh bigeye, the second highest priced species, averaged 2,014 yen/kg (range: 1,803 - 2,227). In comparison, those for frozen bigeye averaged 1,157 yen/kg (range: 987 - 1,337). The average annual wholesale prices for fresh yellowfin averaged 1,129 yen/kg, nearly a half of fresh bigeye (range: 1,065 - 1,201). In comparison, those for frozen yellowfin averaged 650 -779). Fluctuation in prices for yellowfin was slightly less than that for bigeye. The average annual wholesale prices of fresh skipjack averaged 503 yen/kg (range: 367 - 714), while those for frozen skipjack averaged 524 yen/kg (range: 455 - 603). As for albacore, the average annual wholesale prices for the fresh product averaged 527 yen/kg (range: 431 - 701). In comparison, those for the frozen product averaged 361 yen/kg (range: 258 - 449).

Table 37. Arrivals and Average Wholesale Prices of Albacore Tuna at Six Major Central Wholesale Markets in Japan, 1983-1989

Year	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
1983	2,172	701	3,224	392
1984	325	496	4,685	434
1985	280	542	5,134	449
1986	815	431	4,476	258
1987	742	467	3,223	297
1988	N/A	N/A	3,041	336
1989	N/A	N/A	1,542	360

N/A - not available

Source: Suisan Tsushin, June 5, 1988, June 6, 1989 & June 5, 1990; Ministry of Agriculture, Forestry & Fisheries, Government of Japan, 1988 & 1990; National Marine Fisheries Service, 1989-91.

6. MARKETING STRATEGIES

Analyses of global as well as Japanese markets for tunas show that it is recognized that opportunities exist for U.S. tuna fisheries to considerably enhance overseas sales, particularly sales to Japan.

Farming of Bluefin Tuna

Bluefin tuna grows to an extremely large size, up to 3 meters in length and weighing as much as 300 kilograms. To raise such fish in an artificial enclosure is a difficult proposition. However, by modifying the objective from "growing the fish in size" to "improving the meat quality", bluefin farming could be made feasible technically as well as economically.

In an experimental project launched with Japanese technical assistance at Port Lincoln in south Australia two years ago, southern bluefin were caught in local waters when they were approximately 10 kg in size, and were fattened in two pens which held approximately 850 fish. Southern bluefin of this size would normally be good only for canned products, but the fish raised in this project have turned into high-valued products marketable for raw consumption in Japan. Twelve of the fish, raised for approximately 6 months in the pens to an average weight of 13.5 kg (29.70 pounds) (hence, still considerably small) in size, were offered for auction at the wholesale markets in Tokyo and Kyoto, in August, 1991. Eight fish offered at the Tokyo Central Wholesale Market were sold at very favorable prices, ranging from 2,800 yen/kg ($9.43/lb.) to 4,000 yen/kg ($13.47/lb), with an average of 3,530 yen/kg ($11.89/lb). Prices paid for four fish sold at the Kyoto Central Wholesale Market were also very favorable, ranging from 2,500 yen/kg ($8.42/lb) to 2,600 yen/kg ($8.75/lb), with an average of 2,530 yen/kg ($8.52/lb) (Suisan Tsushin, August 27, 1991). By way of comparison, the average price for fresh bluefin at six wholesale markets in Japan in 1990 was 4,937 yen/kg ($16.62/lb) (Table 33).

In a refereed tasting held in Tokyo in August, 1991, farm-grown southern bluefin from the same Australian project, weighing only about 10 kg in size, received superior rating compared to wild frozen southern bluefin and bigeye (Suisan Tsushin, September 2, 1991). Encouraged by these results, Australia is reported to be planning to ship as many as 650 fish from the pens during the high-demand period for bluefin in Japan from October through December, saving around 200 fish to increase their size to 30-35 kg (66-77 pounds).

The success of the Australian bluefin farming project provides encouragement for the U.S. tuna fisheries which have access to small bluefin tuna in domestic waters. Southern California is particularly advantageous for this type of product by virtue of the good air shipment connections to Japan, the relatively stable and mild sea water temperatures in surrounding regions, existence of bluefin in adjacent waters, a fishing community with proven entrepreneurial records, and its past experience with the Japanese bluefin market.

Help from Japanese technical expertise would be necessary, at least for early feasibility studies, and the main focus of the study should be placed on the design of the fish pen, transportation of captured small bluefin tuna, control of temperature in the pen, feed, feeding methods with respect to impact on the surrounding environment, disposal of waste, and protection of fish pens against natural forces.

Value-added Product

An ever expanding list of value-added merchandise using tuna as the base has contributed to increased sales and consumption of tuna in Japan in recent years. One of the notable success stories involved a new product called "negi-toro" introduced in 1990 (Nikkan-Shokuryo Shinbun, August 4, 1990; Suisan Keizai Shinbun, January 30, 1990). Literally meaning "green-onion toro", the product quickly mushroomed with sales of 40 million dollars in about two years. "Negi-toro" (Suisan Keizai Shinbun, January 30, 1990) is essentially a packaged food containing diced meat of bigeye, yellowfin, or even skipjack which has been treated to taste like "toro". Negi-toro is produced using the scrap meat left after preparing the loins. The product is said to have become popular because it was reasonably priced, while offering a high-class image resulting from the name "toro" which is a high-priced item. The product was also popular because it could be consumed without additional preparation, convenience being in high demand in Japan today. Numerous value-added products claiming similar virtues are being introduced by food processors and supermarket chains in Japan (Suisan Keizai Shinbun, January 30, 1991; July 29, 1991).

Direct Sales to Supermarket Chains

The numerous supermarkets with gigantic national chains have become a significant factor in the Japanese economy. Many of these supermarkets maintain independent supply systems directly dealing with producers, including those located overseas. For this reason, they represent additional buyers of tuna other than the existing wholesale buyers. A large diversity of value-added products using tuna have made an appearance in the supermarkets in recent years. "Negi-toro", already discussed, is one of such products. Another example is "mochi-kaeri (take-out) sushi", which contains pieces of tuna and other material which have been prepared for immediate consumption as sushi, and offered in packages catering to various numbers of individuals ranging from a single consumer to a large gathering (Suisan Keizai Shinbun, July 26, & July 29, 1991).

To reduce costs, U.S. producers may consider providing dual products: tuna loins and negi-toro. Negi-toro could be sold directly to supermarkets for immediate retail, while the loins may be sold to suppliers of "mochi-kaeri sushi" and other similar products, under contract with supermarkets. Lists of major supermarket chains and purchasers for supermarket chains are provided in Appendices A & B, respectively.

Target Other Wholesale Markets

While the Tokyo Central Wholesale Market is the largest of all wholesale markets in Japan, the commodities being handled by the nation's other wholesale markets are substantial, and prices for the same commodities may vary considerably from market to market. For instance, prices at the Tokyo Central Wholesale Market may not necessarily be higher than those at other markets, but they may even occasionally fall below the prices of other wholesale markets.

To illustrate this point, Tables 38 through 41 show annual average wholesale prices at ten major central wholesale markets in Japan in 1989 for bluefin, bigeye, yellowfin, skipjack, and albacore. Highest prices were achieved at the Tokyo Central Wholesale Market only for fresh and frozen bigeye and fresh skipjack and frozen albacore. Highest prices for the prized bluefin occurred at Kyoto for the fresh fish, and prices for the frozen bluefin at Nagoya, Osaka and Yokohama surpassed that at Tokyo by a wide margin. In fact, the price for frozen bluefin at Tokyo even fell below the average of the ten major wholesale markets. In 1989, above-average prices were achieved at widely scattered wholesale markets, namely at Tokyo and Kyoto for fresh bluefin, at Nagoya, Osaka and Yokohama for frozen bluefin, at Tokyo and Yokohama for fresh bigeye, at Tokyo and Nagoya for frozen bigeye, at Fukuoka, Kyoto, Osaka and Tokyo for fresh yellowfin, at Sendai, Sapporo and Nagoya for frozen yellowfin, and at Tokyo, Kyoto and Yokohama for fresh skipjack.

Table 38. Arrivals and Average Wholesale Prices of Bluefin Tuna, by Major Central Wholesale Markets in Japan, 1989

Wholesale Market	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
Tokyo	2,669	3,964	7,943	4,483
Yokohama	524	2,365	228	5,144
Nagoya	630	2,866	654	**6,164**
Kyoto	429	**5,164**	---	1,996
Osaka	364	3,196	1,842	5,479
Kobe	49	3,319	436	4,306
Sapporo	755	2,770	476	2,549
Sendai	400	2,711	3	1,929
Hiroshima	162	3,015	5	3,944
Fukuoka	---	2,300	164	2,081
	5,982*	3,482**	11,751*	4,626**

* - Total volume, ** Average price
--- Less than one metric ton

Source: Ministry of Agriculture, Forestry & Fisheries, Government of Japan, "Suisanbutsu Ryutsu Tokei Nenpo", 1990

In 1989, the Tokyo Central Wholesale Market handled between 68 and 75 percent of frozen bluefin and bigeye sold in Japan, but only between 32 and 45 percent of the fresh bluefin, bigeye, yellowfin and skipjack, and as low as about 10 percent of frozen yellowfin. The largest volume of yellowfin was handled at Nagoya (80 percent) for fresh fish and at Osaka (40 percent) for frozen fish. Combining all three major species (bluefin, bigeye and yellowfin), Tokyo handled the largest amounts of fresh products (35 percent), but substantial amounts were also handled at Sendai (19 percent), Osaka (17 percent) and Kyoto (12 percent). Wholesale markets which handled large amounts of frozen products of these three species in 1989 were Tokyo (58 percent), Osaka (18 percent) and Nagoya (9 percent).

Japanese importers, listed in Appendix C, can provide detailed information of the on-going and future market conditions at specific locations and times.

Table 39. Arrivals and Average Wholesale Prices of Bigeye Tuna, by Major Central Wholesale Markets in Japan, 1989

Wholesale Market	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
Tokyo	3,448	2,697	46,781	1,352
Yokohama	1,251	1,887	7,662	1,266
Nagoya	---	---	242	1,335
Kyoto	1,296	1,398	---	---
Osaka	371	1,106	5,957	1,181
Kobe	107	1,026	123	1,296
Sapporo	560	995	879	1,319
Sendai	3,123	1,290	343	1,305
Hiroshima	52	1,208	---	---
Fukuoka	---	---	402	1,170
	10,208*	1,827**	62,389*	1,323**

* - Total volume, ** Average price
--- Less than one metric ton

Source: Ministry of Agriculture, Forestry & Fisheries, Government of Japan, "Suisanbutsu Ryutsu Tokei Nenpo", 1990

Direct Sale to the Tokyo Central Wholesale Market

According to information provided by the U.S. Embassy in Tokyo U.S. exporters of fresh tuna can participate directly in fish and seafood auctions at the Tokyo Central Wholesale Market (TCWM) by exporting on a consignment basis. Auction houses at TCWM are authorized by the Japanese Fisheries Agency of the Ministry of Agriculture, Forestry and Fishery to sell at auction, or through

Table 40. Arrivals and Average Wholesale Prices of Yellowfin Tuna, by Major Central Wholesale Markets in Japan, 1989

Wholesale Market	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
Tokyo	3,458	1,115	2,560	894
Yokohama	683	873	630	936
Nagoya	8,751	1,028	8,314	1,018
Kyoto	1,400	1,405	---	---
Osaka	3,941	1,240	9,823	907
Kobe	1,032	1,013	2,468	921
Sapporo	60	864	697	1,201
Sendai	1568	938	64	1,272
Hiroshima	24	857	1	236
Fukuoka	---	1,854	21	891
	10,937*	1,094**	24,578*	955**

Table 41. Arrivals and Average Wholesale Prices of Fresh Skipjack and Frozen Albacore Tuna by Major Central Wholesale Markets in Japan, 1989

Wholesale Market	Fresh		Frozen	
	Metric Tons	Yen/kg	Metric Tons	Yen/kg
Tokyo	9,712	614	1,542	360
Yokohama	2,959	523	---	---
Nagoya	2,886	482	---	---
Kyoto	190	575	---	---
Osaka	2,103	403	---	---
Kobe	491	437	---	---
Sapporo	252	421	---	---
Sendai	4,786	402	---	---
Hiroshima	202	337	---	---
Fukuoka	1,489	307	---	---
	25,070*	504**	1,542*	360**

* - Total volume, ** Average price
--- Less than one metric ton

Source: Ministry of Agriculture, Forestry & Fisheries, Government of Japan, "Suisanbutsu Ryutsu Tokei Nenpo", 1990

bidding, either through bargaining or at a fixed price, the fresh fish and seafood consigned by producers or purchased on their own account from producers, to middlemen and authorized buyers in wholesale deals. Sales commissions charged for fresh tuna by the auction houses are fixed by law at 5.5 percent. Auction houses in Tokyo importing fish on a consignment basis for auction remit payments to exporters in about one week, minus 5.5 percent commission, import duties, trucking charges, etc.

Auction houses do not usually receive frozen fish directly from overseas. However, if an exporter wishes, it may negotiate with auction houses. Because imports of frozen fish involve advance financial commitment by importers, i.e letters of credit, cold storage fees, etc., auction houses normally use import agents to do administrative work for them. The agent's fee is about 2 percent of the invoice (CAF: cost and freight or CIF: cost, insurance and freight) value. CAF or CIF prices are determined by agreement between exporter and importer, generally corresponding with the Japanese market price. Consignment exports of frozen fish for sale by auction is not recommended because payments may not be received for a long period.

Additional advice received from the U.S. Embassy in Tokyo is listed below.

(A) Ship only high quality tuna:

If a company has been selling fresh tuna in the U.S. domestic market, it may be able to sell a selection of top quality tuna at TCWM on consignment basis. It is important that an exporter be able to sell his lower tuna in the United States. Sending tuna of low fat content or dull meat color, which is unacceptable in the highly competitive Japanese market, may result in huge losses to the exporter.

(B) Check shipping arrangements:

Contact local freight forwarders who are well experienced with overseas shipment of fresh seafood. Investigate with them the best packing material and methods for refrigerated shipments in compliance with U.S. and international air cargo regulations. Draw up an airline schedule requiring minimum handling over the shortest shipping time to Tokyo International Airport in Narita. Find out air cargo charges by weight for flights from several different airports. A special lower rate for food is applied to shipment from certain airports. Freight forwarders can assist with all this and also provide support services for preparing export documents, such as commercial invoice, packing list, airway bill, etc.

(C) Contact auction houses:

If the company feels it can deliver high-quality fresh tuna to Tokyo International Airport shortly after fish are caught, the next step is to get in touch with the Japanese auction houses (Appendix D).

U.S. companies can write to auction houses to obtaian contract forms written in English. In the same letter the company should provide information about itself, its fishing grounds, fishing methods and plans for the airline shipping route and approximate total shipping time including layovers at each transfer point, so the auction company will have a better idea of the company's planning and fish quality. The conditions of the contract usually include a 5.5 percent sales commission for the auction company, deductions from gross sales for import duty, trucking charge, miscellaneous expenses, and the terms of payment. The company should also let the auction house know the name and address of its bank and the account number for receiving remittance. A good auction house usually sends information about each tuna sold by price per kg, and makes comments to help improve quality. If there is a communication problem with the auctioneer, the company should consider an agent in Japan who would oversee the customs clearance, trucking, remittance, etc., and provide better communication with the auction house. An agent would charge a commission of 3-6 percent of gross auction sales.

(D) Getting started:

After a contract is signed with one of the auction houses, the company should plan a shipment schedule with its fishermen including delivery date and approximate quantity. Check with the freight forwarder for cargo booking conditions, and make an advance booking, if necessary.

(E) Select high-quality tuna:

Select the best-quality tuna from the landings for export. Important check points are 1) freshness, 2) meat with a bright red color, not dull or dark, and 3) high fat content. Meat color and fat content are normally checked with a cut near the tail. Chill the selected high-quality fish well without freezing. Pack ice around the body as well as inside the head and the body cavity after gills and guts are removed. Japanese fishermen do all this on board to assure better quality, in addition to bleeding by cutting the tail and the blood vessels behind the neck and right behind the pectoral fins.

(F) Send advance notice of shipment to the auction house:

Send preliminary shipping information by fax or telex to the auction house including the flight number and quantity and weight of the tuna that is being sent. After completion of the shipment, obtain a copy of the commercial invoice, packing list and also the airway bill number from the freight forwarder. Give this information to the auction house by fax as soon as possible, so that the auction house can arrange customs clearance, trucking, etc. in Japan.

(G) Auction result and money:

Auction results are available in about 24 to 36 hours, and remittance should reach the company's bank account in a week or two. The auction results are reported to the company by the auction house directly or through its agent. It will include information on price for each fish, market conditions on the day, total tuna quantity sold, weather conditions, etc., and recommendations for improvement.

(H) Recommendation for quality improvement:

High-quality fish result in good prices. So, if the first shipment brought a disappointing result, the company should be patient and follow recommendations for improvement. If a drastic improvement is necessary, ask the auction company to send a technician for a limited period to teach the staff and fishermen. An improvement in the auction price is a nice reward for these efforts to ensure higher quality.

(I) Japanese calendar:

The Tokyo Central Wholesale Market closes on Sundays, all national holidays and specific customary holidays such as the first three days in January. Get a Japanese calendar from the auction house. The U.S. company should also pay attention to the arrival schedule of its fish at the Tokyo International Airport. Avoid flights that arrive in Japan on Saturday afternoon or the day before holidays. Remember arrivals from the United States are usually in the afternoon and the auction is held early the next morning.

7. CONCLUSION

A huge raw consumption market in Japan offers an opportunity for the U.S. tuna industry to expand its niche in the Japanese market. This market, presently 400,000 tons a year and growing rapidly, is already being supplied by imports totalling about 35 percent of sales. This analysis indicates that not only will this market expand but that the share of the imports will also continue to grow. The trend is alarming to Japanese tuna industry leaders, because this important market, highest in value among all fish species at close to a billion dollars a year, is being increasingly subjected to the influence of foreign imports. Declining catches by Japan's own tuna fleet, as well as many other woes afflicting its industry, along with a sharp upward turn in food preference by consumers buoyed by the nation's increasing affluence and the strengthened yen, are all contributing to sustain this trend for some time in the future.

Based on our analysis, five marketing strategies have been proposed: (1) Farming of bluefin tuna; (2) marketing of our own value-added products; (3) selling fresh tuna directly to the Tokyo Central Wholesale Market; (4) selling also to other wholesale markets and (5) direct sales to supermarket chains.

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U.S. Embassy, Commercial Section, Tokyo, Japan.

Appendix A

Major Supermaket Chain Stores

COMPANY:	**CHUJITSUYA CO., LTD.**
ADDRESS:	2-1-11, KABUKI-CHO, SHINJUKU-KU, TOKYO 160
PHONE:	03-209-2121
TELEX:	02325021 CHUJIT J
CAPITAL:	¥2,595 MIL. ($10.8 MIL)
SALES:	¥218,757 MIL. ($911.5 MIL.) (1983/84)
EMPLOYEE:	7,833
NO. OF STORES:	71

COMPANY:	**THE DAIEI, INC.**
ADDRESS:	9-1, TOYOTSU-CHO, SUITA-SHI, OSAKA 564
PHONE:	06-380-3111
TELEX:	05238422
CAPITAL:	¥14,215 MIL. ($59.2 MIL.)
SALES:	¥1,226,624 MIL. ($5,110.9 MIL.) (1983/84)
EMPLOYEE:	32,265
NO. OF STORES:	166

COMPANY:	**FREX INC.**
ADDRESS:	185-1, OOKUCHI-CHO, MATSUZAKA-SHI, MIE-KEN 515
PHONE:	0598-51-3125
TELEX:	0598512952
CAPITAL:	¥332 MIL. ($1.4 MIL.)
SALES:	¥16,000 MIL. ($66.7 MIL.) (1983/84)
EMPLOYEE:	750
NO. OF STORES:	23

COMPANY:	**ITO-YOKOADO CO., LTD.**
ADDRESS:	4-1-4, SHIBAKOEN, MINATO-KU, TOKYO 105
PHONE:	03-459-2111
TELEX:	23841
CAPITAL:	¥12,663 MIL. ($52.8 MIL.)
SALES:	¥853,793 MIL. ($3,557.5 MIL) (1983/84)
EMPLOYEE:	22,825
NO. OF STORES:	116

COMPANY:	**IZUMIYA CO., LTD.**
ADDRESS:	1-4-4, HANAZONO-MINAMI, NISHINARI-KU, OSAKA 557
PHONE:	06-657-3310
TELEX:	05267627
CAPITAL:	¥3,382 MIL. ($14.1 MIL.)
SALES:	¥239,053 MIL. ($996.1 MIL.) (1983/84)
EMPLOYEE:	7,755
NO. OF STORES:	55

COMPANY:	**JUSCO CO., LTD.**
ADDRESS:	45, BINGO-MACHI 2-CHOME, HIGASHI-KU, OSAKA 541
PHONE:	06-205-8656
TELEX:	02225528
CAPITAL:	¥10,647 MIL. ($44.4 MIL.)
SALES:	¥695,116 MIL. ($2,896.3 MIL.) (1983/84)
EMPLOYEE:	17,256
NO. OF STORES:	148

COMPANY:	**NAGASAKIYA CO., LTD.**
ADDRESS:	3-7-14 HIGASHI NIHONBASHI, CHUO-KU, TOKYO 103, JAPAN
PHONE:	(03) 662-5511
NO. OF STORES:	90

COMPANY:	**NICHI-I CO., LTD.**
ADDRESS:	2-14 AWAJI-CHO, HIGASHI-KU, OSAKA 541, JAPAN
PHONE:	(06) 203-5071
NO. OF STORES:	148

COMPANY:	**THE SEIYU, LTD.**
ADDRESS:	3-1-1, HIGASHI-IKEBUKURO, TOSHIMA-KU TOKYO 170
PHONE:	03-989-5063
TELEX:	02723113
CAPITAL:	¥6,795 MIL. ($28.3 MIL)
SALES:	¥696,354 MIL. ($2,901.5 MIL.) (1983/84)
EMPLOYEE:	18,077
NO. OF STORES:	164

COMPANY:	**TOKYO STORE CHAIN CO., LTD.**
ADDRESS:	C/O TOUKOU BLDG., 1-21-12, KAIMEGURO MEGURO-KU, TOKUO 153
PHONE:	03-711-0109
TELEX:	03-791-6521
CAPITAL:	¥3,033 MIL. ($12.6 MIL.)
SALES:	¥184,310 MIL. ($768.0 MIL.) (1983/84)
EMPLOYEE:	5,024
NO. OF STORES:	76

COMPANY:	**UNY CO., LTD.**
ADDRESS:	2-45-19, NAEKI, NAKAMURA-KU, NAGOYA-SHI 453
PHONE:	052-562-1411
TELEX:	UNYHONSH J59797
CAPITAL:	¥7,190 MIL. ($30.0 MIL.)
SALES:	¥386,098 MIL. ($1,608.7 MIL.) (1983/84)
EMPLOYEE:	12,183
NO. OF STORES:	104

COMPANY:	**YAC'S (CHIBAYAKU GROCERIES, INC.)**
ADDRESS:	20-16 TSURUSAWA-CHO, CHIBA-SHI, CHIBA-KEN, JAPAN
PHONE:	(0472) 25-3426
TELEX:	3722-390

Source: Japan External Trade Organization, Los Angeles.

APPENDIX B

PURCHASERS FOR SUPERMARKET CHAIN STORES

COMPANY:	**AIC INC.**
ADDRESS:	C/O KUDAN FUJI BLDG., 2-4, KANDA JINBO-CHO, CHIYODA-KU, TOKYO 101
PHONE:	03-230-2884
TELEX:	02325034
CAPITAL:	¥220 MIL. ($917,000)
SALES:	¥36,500 MIL. ($152.1 MIL.) (1983/84)
EMPLOYEE:	100
MEMBER COMPANIES:	JUSCO CO., LTD., UNY CO., LTD. IZUMIYA CO., LTD. CHUJITSUYA CO., LTD. SAFEWAY STORES, INC.

COMPANY:	**A.J.D. DEVELOPMENT CO.**
ADDRESS:	1-8 MUROMACHI, NIHOMBASHI, CHUO-KU, TOKYO 103
PHONE:	(03) 241-6334
TELEX:	3722385 (AJDRUG J)

COMPANY:	**CO-OPTRADE JAPAN LTD.**
ADDRESS:	SEIKYO KAIKAN BLDG., 4-1-13 SENDAGAYA, SHIBUYA-KU, TOKYO 151, JAPAN
PHONE:	(03) 404-3251
TELEX:	23393 (COOPTR)

Source: Japan External Trade Organization, Los Angeles.

APPENDIX C

MAJOR JAPANESE TUNA IMPORTERS

COMPANY: **Ataka Produce Co., Ltd.**
ADDRESS: Y-Bldg., 13-2, Shibaura 3-chome, Minato-ku, Tokyo 108
PHONE: (03) 798-0841
FAX: (03) 798-0845

COMPANY: **Bokusui Sangyo Co., Ltd.**
ADDRESS: 2-2, 1-chome Uchisaiwaicho, Chiyoda-ku, Tokyo 100
PHONE: (03) 508-1163
FAX: (03) 504-2637
TELEX: 222-2392

COMPANY: **C. Itoh & Co., Ltd.**
ADDRESS: 5-1, 2-chome Kitaaoyama, Minato-ku, Tokyo 107
PHONE: (03) 497-6186
TELEX: J 22295, J 22296, J 22297

COMPANY: **Hoko Fishing Co., Ltd.**
ADDRESS: 2-4, 1-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 542-5641/4
FAX: (03) 545-2167
TELEX: 2522933

COMPANY: **Itoman Produce Co., Ltd.**
ADDRESS: 5F Sumitomoseimei Aoyama Bldg., 1-30, 3-chome Minamiaoyama, Minato-ku, Tokyo 107
PHONE: (03) 478-9247
TELEX: J 22568

COMPANY: **Marubeni Corporation, Tokyo Head Office**
ADDRESS: 4F Ohtemachi Bldg., 6-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 282-4752
FAX: (03) 282-9654
TELEX: 2224441

COMPANY: **Matsuoka Co., Ltd.**
ADDRESS: 10-12, 1-chome Higashiyamatomachi, Shimonoseki City, Yamaguchi Pref. 750
PHONE: (0832) 67-5566
FAX: (0832) 67-5286
TELEX: 6823-66 MATSU J

COMPANY: **Meiwa Trading Co., Ltd.**
ADDRESS: 3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100
PHONE: (03) 240-9388/91
FAX: (03) 240-9560
TELEX: J 22336, J 26746, J 25317

COMPANY: **Mitsubishi Corporation**
ADDRESS: 3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100
PHONE: (03) 210-6670
FAX: (03) 210-6726, (03) 213-3529
TELEX: J 22222/5, 222-2071, 6333

COMPANY: **Mitsui & Co., Ltd.**
ADDRESS: 2-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 285-5907
FAX: (03) 285-9802
TELEX: J 22253

COMPANY: **Nichirei Corporation**
ADDRESS: 3-23, 3-chome Misakicho, Chiyoda-ku, Tokyo 101
PHONE: (03) 237-2231
FAX: (03) 237-2277
TELEX: J 22450, J 25340

COMPANY: **Nichiro Gyogyo Kaisha, Ltd.**
ADDRESS: 21-1, 1-chome Yurakucho, Chiyoda-ku, Tokyo 100
PHONE: (03) 240-6353
FAX: (03) 287-2326/8
TELEX: 222-3661 NICHIR J

COMPANY: **Nippon Suisan Kaisha, Ltd.**
ADDRESS: 6-2, 2-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 244-7233, (03) 244-7243/5
FAX: (03) 244-7269
TELEX: NISSUI J 32221

COMPANY: **Nissho Iwai Corporation**
ADDRESS: Nissho-Iwai Bldg., 4-5, 2-chome, Akasaka, Minato-ku, Tokyo 107
PHONE: (03) 588-3568, 3574, 3579, 3763, 3525
FAX: (03) 588-3777, 4812
TELEX: J 22233

COMPANY: **Nozaki & Co., Ltd.**
ADDRESS: 16-19, 7-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 542-9220
FAX: (03) 545-2006
TELEX: J 22375

COMPANY: **Taito Seiko Co., Ltd.**
ADDRESS: Imaasa Bldg., 1-21, 1-chome Higashishinbashi, Minato-ku, Tokyo 105
PHONE: (03) 572-3235
FAX: (03) 571-7881
TELEX: J 25306

COMPANY: **Taiyo Fishery Co., Ltd.**
ADDRESS: 1-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 216-0811
TELEX: J 22278 OCEANFIS

Overseas Trade Department
FAX: (03) 287-0660
PHONE: (03) 284-0153, 0157

International Trade Department No. 1
FAX: (03) 201-6251
PHONE: (03) 284-0473

Overseas Fisheries Operations Department
PHONE: (03) 287-0561/2, 216-0946

COMPANY: **Takaei Trading Co., Ltd.**
ADDRESS: 22-4, 6-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 542-4791
FAX: (03) 542-4794
TELEX: 2523736 TAKAEI J

COMPANY: **Toei Reefer Line, Ltd.**
ADDRESS: 5F, Kokusai Hamamatsucho Bldg., 9-18, 1-chome Kaigan, Minato-ku, Tokyo 105
PHONE: (03) 438-3203
FAX: (03) 437-6176
TELEX: J 27529 FISHERY

COMPANY: **Tokusui Co., Ltd. Tokyo Office**
ADDRESS: 4F Tokyo Suisan Kaikan Bldg., 5-9, Toyomicho, Chuo-ku, Tokyo 105
PHONE: (03) 533-5131
FAX: (03) 533-5173
TELEX: 2522697

COMPANY: **Tokyo Commercial Co., Ltd.**
ADDRESS: Playguide Bldg, 6-4, 2-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 534-1301/8
FAX: (03) 531-6045
TELEX: 0252-2432

COMPANY: **Tokyo Seafoods Ltd.**
ADDRESS: 14-4, 1-chome Kyobashi, Chuo-ku, Tokyo 104
PHONE: (03) 561-4571
FAX: (03) 561-4575
TELEX: 2522527

COMPANY: **Toshoku Ltd.**
ADDRESS: 2-4, Nihonbashi Muromachik, Chuo-ku, Tokyo 103
PHONE: (03) 245-2178, 2185
FAX: (03) 245-2215
TELEX: J 22352

COMPANY: **Toshoku Seafoods Ltd.**
ADDRESS: Sumitomo Tsukiji Bldg., 4-14, 5-chome, Tsukiji, Tokyo 104
PHONE: (03) 541-1173
FAX: (03) 545-2203
TELEX: J 22352

COMPANY: **Toyota Tsusho Kaisha, Ltd.**
ADDRESS: 3-18, 2-chome Kudanminami, Chuo-ku, Tokyo 102
PHONE: (03) 230-8390, 8081/3, 8087
FAX: (03) 230-8055, 8042
TELEX: J 22827

COMPANY: **Wako Marine, Inc.**
ADDRESS: 5-13, 3-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 543-0501
FAX: (03) 543-0867
TELEX: 2522713 WAKOMA J

Source: Japan Marine Products Importes Association, Tokyo, Japan.

APPENDIX D

BROKERAGE COMPANIES AT THE TOKYO CENTRAL WHOLESALE MARKET

COMPANY:	**TOHTO SUISAN**
ADDRESS:	TOKYO CENTRAL WHOLESALE MARKET 2-1, 5-CHOME, TSUKIJI- CHUO-KU, TOKYO 104, JAPAN
CONTACT:	SHOICHI KOBAYASHI, Manager
PHONE:	03-3541-1803
FAX:	03-3541-5647
TELEX:	2522757
SALES:	1,487 million dollars (April 1989-March 1990)
NET PROFIT:	3.8 million dollars (April 1989-March 1990)

COMPANY:	**DAIICHI SUISAN**
ADDRESS:	TOKYO CENTRAL WHOLESALE MARKET 2-1, 5-CHOME, TSUKIJI- CHUO-KU, TOKYO 104, JAPAN
CONTACT:	KIYOSHI HAMAMORI, Manager
PHONE:	03-3541-2561
FAX:	03-3545-5612
TELEX:	05222871
SALES:	448 million dollars (April 1989-March 1990)
NET PROFIT:	0.35 million dollars (April 1989-March 1990)

COMPANY:	**CHUO GYORUI**
ADDRESS:	TOKYO CENTRAL WHOLESALE MARKET 2-1, 5-CHOME, TSUKIJI- CHUO-KU, TOKYO 104, JAPAN
CONTACT:	JUNZO ITO, Manager
PHONE:	03-3541-2561
FAX:	03-3545-5612
TELEX:	05222871
SALES:	1,650 million dollars (April 1989-March 1990)
NET PROFIT:	6.82 million dollars (April 1989-March 1990)

COMPANY:	**DAITO GYORUI**
ADDRESS:	TOKYO CENTRAL WHOLESALE MARKET 2-1, 5-CHOME, TSUKIJI- CHUO-KU, TOKYO 104, JAPAN
CONTACT:	KO ISHIDA, Manager
PHONE:	03-5565-8151
FAX:	03-3543-9758
TELEX:	2522248
SALES:	1,559 million dollars (April 1989-March 1990)
NET PROFIT:	0.87 million dollars

COMPANY:	**TSUKIJI UOICHIBA**
ADDRESS:	TOKYO CENTRAL WHOLESALE MARKET 2-1, 5-CHOME, TSUKIJI- CHUO-KU, TOKYO 104, JAPAN
CONTACT:	DENJI AOCHI, Manager
PHONE:	03-3541-6130
FAX:	03-3543-4960
TELEX:	25222061
SALES:	1,100 million dollars (April 1989-March 1990)
NET PROFIT:	5.56 million dollars (April 1989-March 1990)

Sources: U.S. Embassy, Commercial Section, Tokyo, Japan.
Suisan Keizai Shinbun, 1990.

☆U.S. GOVERNMENT PRINTING OFFICE: 1992 - 679-900/50019